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DECEMBER, 1955

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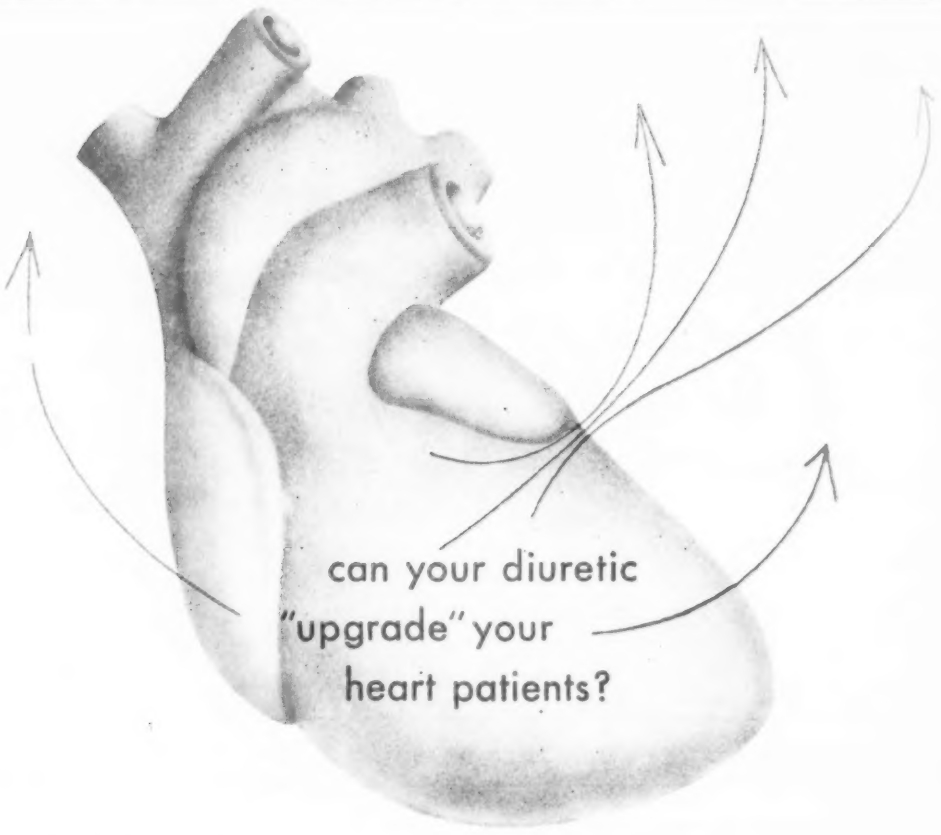

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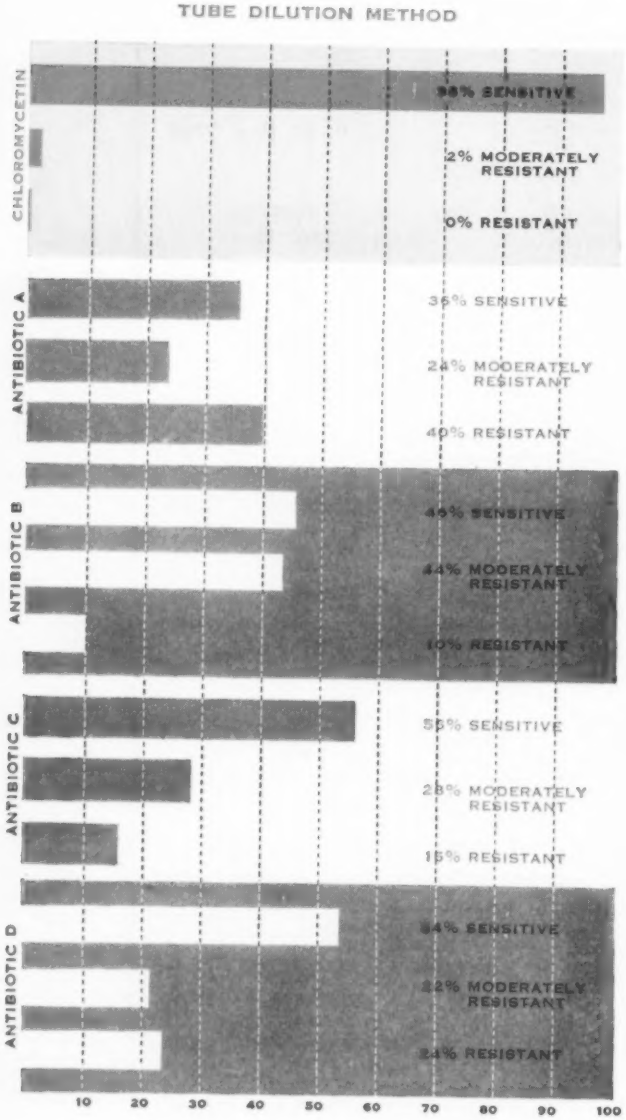

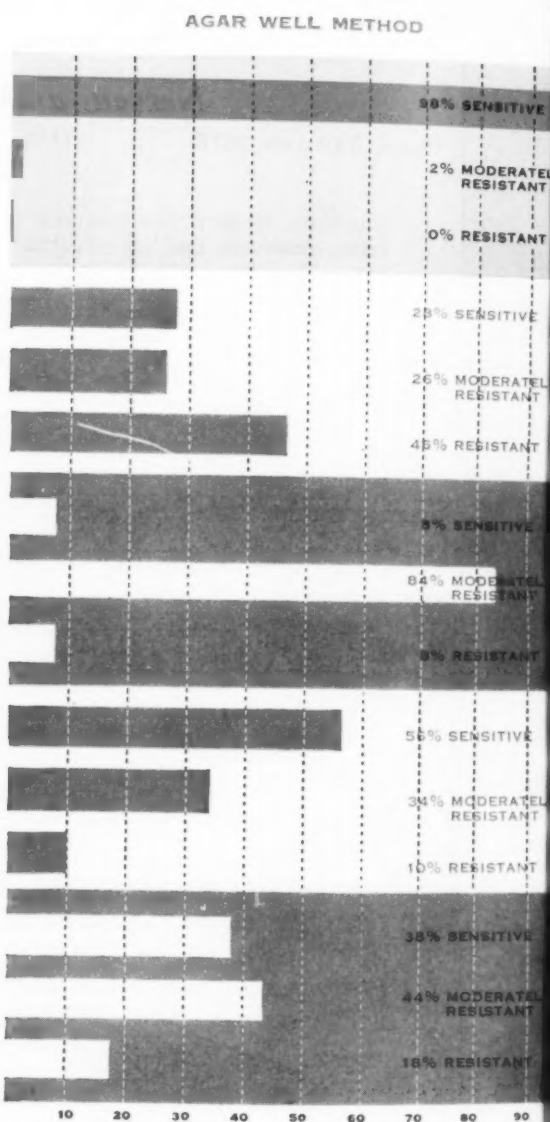

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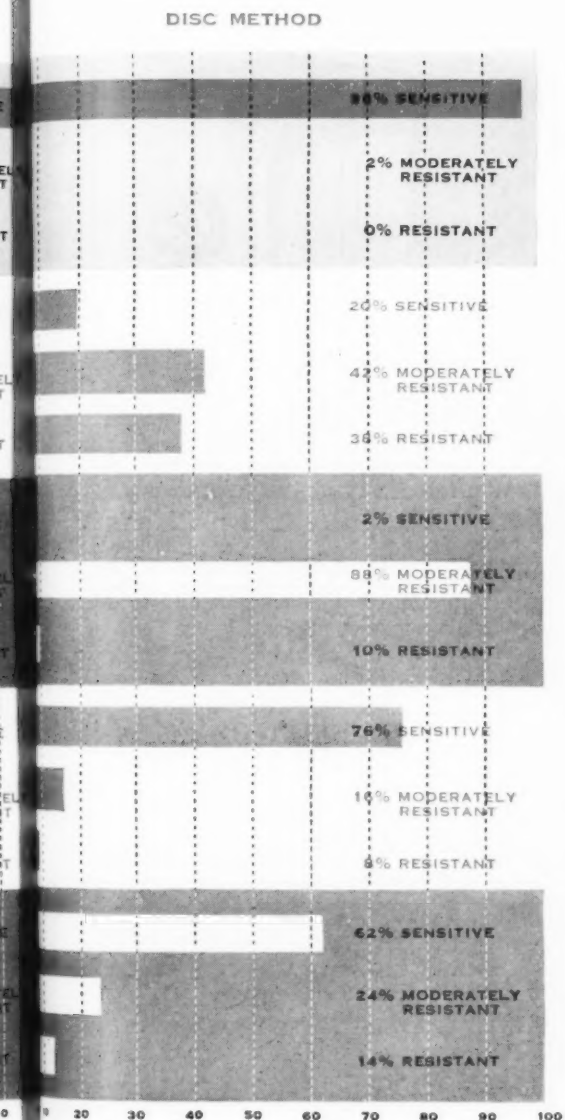

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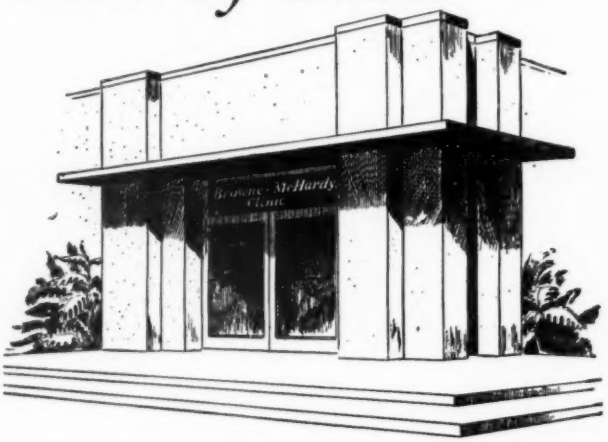

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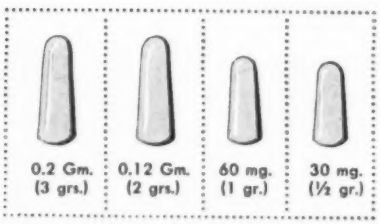

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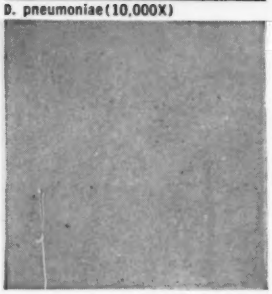

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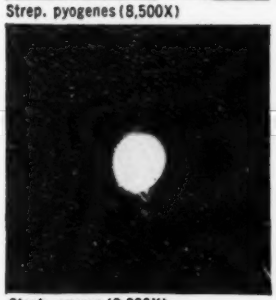

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The clinical pathologist is a diagnostician familiar not only with the techniques of laboratory methods, but especially their applications, limitations and interpretations. He is a physician interested in the healing arts and the use of the special methods of his field in the care of the sick. Because he is familiar with the clinical aspects of disease, and the danger inherent in misleading laboratory findings, he is aware of the need for constant control of old methods and the careful evaluation of new ones. He is concerned with the practical value of laboratory tests in the care of the patient and where consulted makes a selection to obtain the most information at the least expense to the patient. His interpretations of biopsy material, based on familiarity and experience with fine differential points, will indicate the need for therapy or eliminate needless treatment. His knowledge of rare entities in his field enables him to advise as to what is to be done. The technique and clinical indication for doing it is the decision of his clinical colleagues.

Pathology is now as much the practice of medicine as any of the clinical branches. For this reason, if the supervision and performance of some of the more skilled parts is done by non-specialized medical persons, this value is correspondingly decreased. Moreover, pathology practice performed by non-medical persons is along the lines suggested by the "do-gooders" in their plan for the socialization of all medicine. The physicians practicing clinical medicine should remember that the pathologist's problems in preventing this are their problems in preserving the highest type of medical practice for the greatest number of patients.

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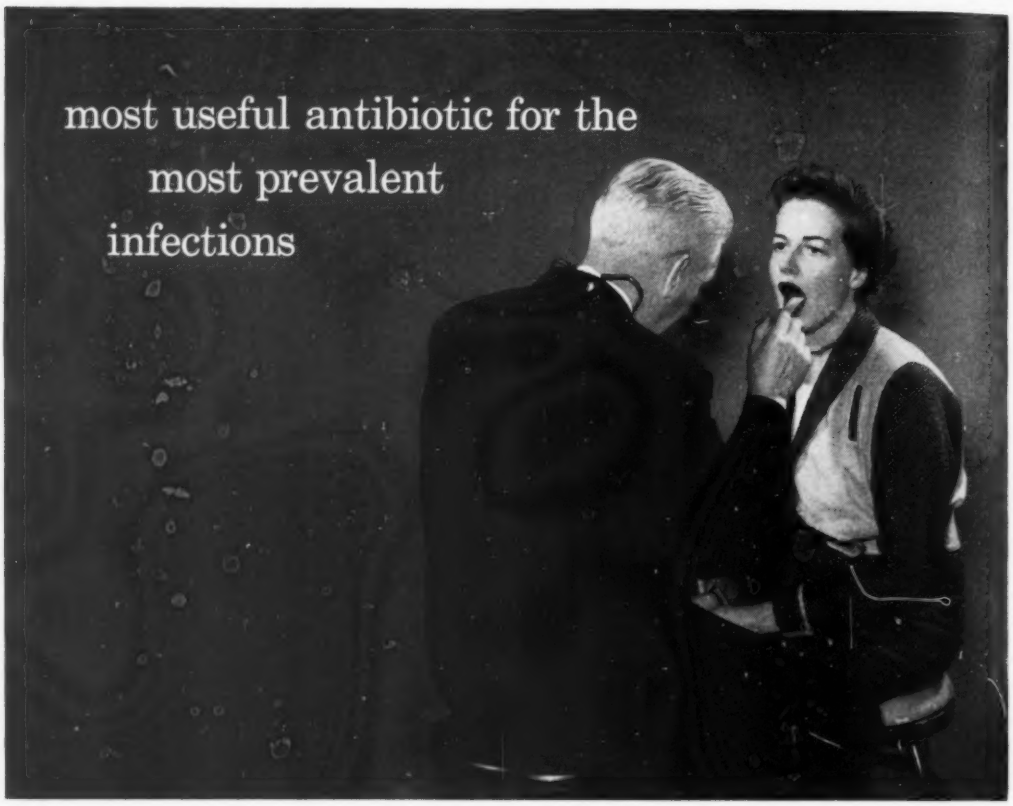

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DECEMBER, 1955

Published Monthly
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EMERGENCY MANAGEMENT OF THORACIC TRAUMA *

LAWRENCE H. STRUG, M. D. †
WILLIAM LEON, M. D. †
NEW ORLEANS

Injuries to the chest wall and the contents of the thoracic cage are occurring with increasing frequency in civilian practice. The automobile and other high speed transportation are responsible for this increased incidence. A variety of injuries to the thorax may result in trauma not only to the thoracic cage and pulmonary parenchyma but also to the trachea, bronchi, esophagus, diaphragm, heart and great vessels. Many minor thoracic injuries go unnoticed as they cause little or no disturbance in cardiorespiratory physiology. However, it is not uncommon to see even a relatively minor thoracic injury result in serious alteration in the dynamics of respiration. Severe thoracic injury almost always causes major alteration in cardiorespiratory physiology. It is with this group that we must be concerned. It is obvious that successful management of such cases depends largely on careful evaluation of the injuries. Immediate steps taken to rectify this type of altered physiology can mean the difference between early recovery without complications, a chronic pulmonary invalid, or possible death of the patient. In view of the increasing incidence and the evident lack of knowledge of the immediate management of such injuries, we think that a reiteration of the principles of early management of chest trauma is in order.

In the immediate management of thoracic injuries, one is confronted with (1) the disturbances of cardiorespiratory physiology; (2) shock, which may be neurogenic or due to blood loss; (3) associated injuries; and (4) prevention of infection.

Disturbances in cardiorespiratory physiology are (1) retained bronchial secretions; (2) instability of the chest wall; (3) sucking wounds of the chest (open pneumothorax); (4) tension pneumothorax; (5) hemothorax and (6) cardiac tamponade.

It is essential that all patients with serious injuries of the chest be sent to a hospital as quickly as possible. The patient should be transported in the semi-erect or semi-reclining position lying on the involved side if possible. This serves to splint the injured side, reduce the pain and also may prevent the transbronchial spill of secretions or blood. It is imperative that cardiorespiratory function be restored to near normal as rapidly as possible. Immediate x-rays are not necessary. Tracheal shift, tension pneumothorax or hemothorax can be recognized by clinical means. Sucking wounds of the chest require an occlusive dressing of dry gauze.

In the immediate management of severe

* Presented at the Seventy-fifth Annual Meeting of the Louisiana State Medical Society, New Orleans, May 4, 1955.

† From the Department of Surgery, Louisiana State University School of Medicine, New Orleans, Louisiana.

thoracic trauma one is confronted with the treatment of shock. The use of blood and plasma in adequate quantities is essential. Narcotics should be used sparingly as they depress the cough reflex.

A patent airway is absolutely necessary in the management of thoracic trauma. It is not uncommon for the patient to have blood as well as excessive secretions accumulate in the tracheobronchial tree. He must be encouraged to breathe deeply and cough. Pain will prevent an effectual cough and must be relieved. Retained secretions can be removed by nasotracheal catheterization or bronchoscopy under topical anesthesia. If this is not sufficient, tracheostomy should be performed. In serious chest injuries, this should frequently be performed as a primary procedure. Tracheostomy in itself has never resulted in the death of a patient, but failure to do so has very often been a causative factor. This method provides direct access to the trachea for the removal of secretion and decreases the respiratory effort by effectively lessening the dead space as suggested by Carter and Guiseffi. In our experience tracheostomy has been of immeasureable benefit in serious chest injuries.

Another essential point in the restoration of normal cardiorespiratory physiology is full re-expansion of the lungs. It is quite common in thoracic injuries for a pneumothorax, or more often a pneumohemothorax to develop. Obviously the collection of fluid and air collapses the lung on the side involved. Immediate aspiration of the fluid and air should be instituted so as to facilitate re-expansion of the lung. Thoracentesis should be repeated at frequent intervals until practically full re-expansion is obtained. Another method of accomplishing the desired result is to insert a catheter through an interspace and connect it to controlled suction. Frequently a dilated stomach may be responsible for the elevation of the diaphragm. A Levin tube inserted into the stomach will deflate it.

Finally, the prophylactic use of antibiotics against pleural infection is advisable.

A simple fracture of a rib can be diagnosed without difficulty by clinical means. Breathing causes severe pain at the fracture site, with radiation along the involved intercostal nerve. Strapping of the chest to alleviate the pain is antiquated as it inhibits full excursion of the chest wall. Intercostal nerve block controls the pain and does not limit respiratory movement. However, one must block the intercostal nerves above and below the fracture site because of the overlapping nerve supply. These blocks should be repeated if necessary, but one nerve block usually is sufficient. Our recent experiences with xylocaine prove it to be a more efficient and longer lasting local anesthetic. It is imperative to follow these patients with x-ray, even in simple rib fractures, because of the possibility of the occurrence of a pneumothorax or hemothorax.

Fracture of the sternum is rare, but when it occurs it is incomplete and seldom shows displacement. Severe blows on the sternum will result in bilateral fracture of the ribs at the costochondral junction, either unilateral or bilateral, causing a parodoxical motion of the sternal plate with resultant serious conseqences. These include pneumothorax, cardiac failure, pericarditis, cardiac tamponade and mediastinal shift. It is necessary to stabilize the sternum by some type of fixation with overhead traction. A number of methods of such traction have been devised and have proved satisfactory. The method which we have used with good results has been to insert three Bigelow screws through the outer plate of the sternum into the inner plate. A malleable bar is then inserted through slots in the head of the screws, and this is attached to overhead traction by a spreader, using 5 to 10 pounds to stabilize the chest. A Backhaus towel clip hooked about the sternum can also be used.

Multiple fractures of the ribs are usually associated with paradoxical motion of that segment. This is usually referred

to as a stove-in or flail chest. This occurs mainly in the antero-lateral plane. The posterior portion of the chest wall is usually well supported by muscles and the scapula, which prevent extreme paradoxical motion. Trauma results in diminished aeration of the lungs, and an increase in bronchial secretions. As the cough is ineffectual the secretions cannot be expectorated. Mediastinal emphysema is a fairly common occurrence in this type of injury, manifested by subcutaneous emphysema of face, neck, and thorax. The chain of events is as follows: There are multiple alveoli which rupture, the air progressing along the interstitial planes to the mediastinum and then into the subcutaneous tissues of the neck. This is a severe chest injury and treatment should be directed toward stabilization of the chest wall and maintenance of a clear airway. Stabilization can be accomplished by applying sand bags to the area of paradoxical movement of the chest. Backhaus clamps applied about a rib and to overhead traction may be used, and lastly, the immediate operative wiring of the ends of the fractured ribs as advocated by Coleman may be carried out. Tracheostomy is particularly valuable in maintaining a clear airway, and if in any doubt, should be performed.

One of the real dangers of trauma to the thorax is the development of air leaks so large as to result in excessive positive pressure within the thorax. This is called a tension pneumothorax. It may consist of air itself or be accompanied by hemorrhage into the pleural cavity. It can be suspected clinically if the patient becomes markedly dyspneic with some degree of cyanosis, and the mediastinum is shifted to the opposite side as evidenced by a palpable shift of the trachea. Percussion of the involved side reveals a hyperresonant note. If air alone is suspected, a needle is inserted into one of the anterior interspaces, usually the second or third, and attached to a closed underwater seal. If one so desires, the tube may be attached to controlled suction. A catheter may be substituted for the needle and it is left in until the lung is fully re-expanded. One must be fully cognizant of the fact that a bilateral pneumothorax may occur or that a contra-coup pneumothorax may exist.

Hemothorax may result from a laceration of the lung or a rupture of an intercostal vessel. Small lacerations of the lung cause little or no concern since the air leak and bleeding soon subside as the laceration is sealed. However, intercostal bleeding can be profuse because of the pressure in the systemic circulation. This type of bleeding is relatively uncommon from nonpenetrating wounds. Aspiration of the blood in the pleural cavity should be immediate, and repeated at twelve to twenty-four hour intervals until the pleural cavity is relatively clear of blood and air and the lung is fully re-expanded. Occasionally multiloculations of fluid occur which make it difficult to aspirate all the blood or air from the pleural cavity. If a clotted hemothorax results, decortication may be necessary to accomplish full re-expansion of the lung. The optimum time for decortication of a clotted hemothorax is usually between four and seven weeks.

PENETRATING WOUNDS OF THE CHEST

Although this type of wound occurred with great frequency during the war, the incidence in civilian practice is sufficiently great to warrant more detailed knowledge of its management.

The treatment of penetrating wounds depends largely on the severity and extent of the damage to the underlying lung. Ice-pick wounds are fairly common and attention is directed to the underlying pulmonary or vascular damage. Knife wounds involving only the chest wall should be cleansed, debrided if necessary, and sutured. Bleeding into the pleural cavity, if profuse and excessive, implies that a large vessel—either pulmonary or systemic—has been injured and demands immediate operative intervention.

High velocity missiles may create wounds of entrance or exit which are relatively negligible, and the chief concern once more is with the underlying damage. Treatment should be directed toward get-

ting the patient out of shock, maintaining an open airway, cleansing, debridement and closure of wounds. The patient should be observed for the possible occurrence of pneumothorax or hemothorax and appropriate treatment undertaken.

Retained missiles over 1.5 cm. in size usually require operative removal. "Sucking wounds" of the chest produced by large missiles may create an open pneumothorax. Occasionally, the opening into the pleural cavity may be plugged by tissue during the expiratory phase of respiration, thereby creating a tension pneumothorax. The sucking wound must be immediately sealed off with a tight dry dressing, the patient's general condition assessed, treatment of shock instituted, a clear airway maintained, and as soon as the condition of the patient warrants, the thoracic wound is surgically treated. This treatment consists of debridement of the wound, repair of the underlying pulmonary damage, re-expansion of the lung, and closure of the wound after an intercostal tube drain is inserted through a dependent interspace. The tube is then connected to an underwater seal or controlled suction.

Abdomino-thoracic wounds may be caused by sharp instruments or missiles and naturally add abdominal complications to those present in the thorax. Abdominal rigidity is commonly found in injuries to the anterior chest wall and it is not uncommon for the abdomen to be entered with the mistaken diagnosis of abdominal injury based purely on the rigidity. However, if the rigidity persists after effective treatment of the chest injury, the possibility of further damage must be considered. Perforation and hemorrhage are the two serious complications to be watched for. Naturally in a large wound allowing free exploration, the abdominal contents should be examined as carefully as the thoracic, and early repair accomplished. This may be done through the thoracic wound completely, or through a separate abdominal incision, or, if necessary, a combined incision.

LUNGS

Injuries to the lungs may occur in either nonpenetrating or penetrating wounds of the chest. It may involve the lung parenchyma, trachea or bronchi. It is extremely rare for major vessels to be damaged in nonpenetrating trauma.

Lacerations of the lung parenchyma are most frequently caused by fractured ribs which may result in a tension pneumothorax or hemothorax. Parenchymal wounds are not usually large and do not bleed excessively unless major pulmonary branches are involved. If fluid and air are aspirated, the lung will very readily undergo full re-expansion. Continued bleeding or persistence of a tension pneumothorax are prime indications for exploratory thoracotomy.

Rupture of the trachea or bronchi may be recognized early in a crushed chest if there is a rapidly increasing mediastinal and subcutaneous emphysema, with or without pneumothorax. Bronchoscopy may confirm the presence of a tear, and if this is the case, early operative repair is the treatment of choice. In these patients with extensive rapidly forming subcutaneous emphysema, mediastinal decompression and tracheostomy should be done.

ESOPHAGUS

Tears of the esophagus can result from spontaneous rupture, which is directly due to sudden increase in intra-esophageal pressure caused by violent vomiting. The symptoms are usually an onset of sudden severe pain in the mediastinum (usually in the lower thoracic region), shock, mediastinal emphysema and left pneumothorax. The treatment is early operative repair of the esophagus through a left thoracic approach with closed intercostal drainage of the pleural cavity. Lacerations of the esophagus caused by sharp foreign bodies, missiles or stab wounds are recognized by air leakage both into pleural cavity and mediastinum. If the leakage of air is minimal, conservative therapy such as antibiotics and gastric intubation may suffice. In large air leaks operative repair is the procedure of choice.

DIAPHRAGM

Compression of the abdomen and lower

chest may often result in an acute rupture of the diaphragm. In view of the serious associated injuries, rupture of the diaphragm is not often suspected or recognized. The fact that an acute rupture can occur must be constantly kept in mind in crush injuries or when an individual has fallen from a height. The left leaf of the diaphragm is much more frequently the site of a tear and this usually occurs transversely at the dome. However, one must be cognizant of the fact that rupture of the right leaf does occur and permits the entrance of a large part of the right lobe of the liver into the pleural cavity. The organs usually found in a traumatic diaphragmatic hernia on the left are colon, stomach, spleen, small intestine and omentum.

In the majority of cases traumatic diaphragmatic herniae do not require emergency operative intervention. However, if severe respiratory embarrassment occurs, it may be necessary to perform an immediate repair.

HEART

Contusions of the heart may be caused by violent compression of the chest, such as steering wheel injuries. This may cause sudden death, because of damage to the coronary vessels. If the patient survives, the contusion may give rise to myocardial insufficiency with corresponding electrocardiographic changes. The treatment is that carried out for myocardial insufficiency from its usual causes. If pericardial tamponade occurs a pericardiocentesis should be carried out.

Wounds of the pericardium and heart are commonly due to stab wounds and missiles. If the patient survives the immediate trauma, cardiac tamponade is to be anticipated. Pallor, cyanosis, distended neck veins, rapid pulse and fall in blood pressure are indications of cardiac tamponade. The heart sounds are distant. If the cardiac wound is a small one, pericardiocentesis alone may be sufficient. However, in larger wounds, immediate exploration of the pericardium is mandatory.

CONCLUSIONS

Serious thoracic trauma is increasing and a clear understanding of the basic principles in the management of chest injuries is necessary. The early re-expansion of the lung and re-establishment of a patent airway are two very important and necessary principles which must be carried out to restore normal cardiorespiratory physiology. In serious cases tracheostomy has proven of inestimable value. It is important that a prompt diagnosis and a careful evaluation and follow-up of the patient be carried out, lest late complications develop and go unrecognized. The recent advances in therapeutic measures and their application has resulted in the saving of lives in what previously had been fatal chest injuries.

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DISCUSSION

Dr. Charles A. Beskin (Baton Rouge): Dr. Strug has covered this broad subject so comprehensively, that there is really little to be added. I thoroughly agree with his concepts, and would like to emphasize one or two points.

Too often, the critical need for restoring immediate cardiorespiratory balance to the victim of an automobile accident with chest injury is overlooked. Emergency tracheotomy can be a most useful, life-saving procedure in cases of multiple rib fractures with severe paradox and ineffective cough. It has been shown that a simple tracheotomy can lower the physiologic "dead space" by over 100 cc. and significantly improve the efficiency of ventilation. At the same time, adequate bronchial toilet can be instituted.

In cases of extensive rib cage mobility due to bilateral fractures and sternal fracture, skeletal traction often is inadequate, and one should not fear operative intervention under endotracheal anaesthesia, and reduction of the individual fractures by suture or intramedullary fixation. Controlled positive pressure breathing by the anaesthetist will often improve the trauma patient with anoxemia and CO_2 retention secondary to an inefficient, paradoxing chest wall.

I was glad to hear Dr. Strug emphasize the harm done by strapping the chest for rib fractures. I have found local intercostal nerve block with either novocaine or nupercaine in oil to be highly effective in controlling pain without embarrassing respiration.

One should be particularly alert to the possibility of bronchial rupture or tear in the ever-common steering post injuries. These cases give

rise to overwhelming tension pneumothorax and mediastinal emphysema, and are usually refractory to simple tube drainage and suction. Immediate thoracotomy is indicated, if such a complication is suspected. Bronchoscopy may be revealing in some cases of bronchial tear.

I would again like to commend Dr. Strug for his informative and lucid presentation.

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WILMS' TUMOR: ITS BEHAVIOR AND PROGNOSIS *

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CASE HISTORY

In July of 1953, 4½ year old Jimmie was admitted to hospital one week after his mother had noted an abdominal mass. He had been complaining of abdominal pain for one month and there had been some weight loss over a period of three months. The tumor filled the right side of the abdomen and x-ray studies confirmed its renal origin (Fig. 1). In a

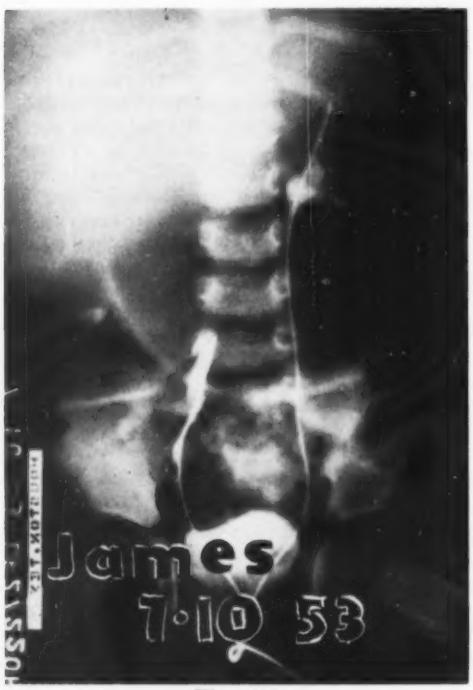

Figure 1

radiograph of the chest, the right hilar shadow was rounded and slightly enlarged. A metastatic lesion was considered but could not be confirmed. Because of the size of the mass, preoperative radiation was carried out (1580r tumor dose through opposing 10 by 15 cm. fields in nine days). The mass diminished in size during treatment and on July 29, 1953, the right kidney was removed. As far as could be determined, the local lesion was completely removed: there were no evident metastases. The kidney contained a 6.5 cm. tumor and the histologic diagnosis was Wilms' tumor. The child's progress after operation was satisfactory. His clinic visits were uneventful. The questionable pulmonary lesion did not change.

In October 1954, the mother brought 3 year old Frank to hospital with a story of bloody urine for four days. A discrete mass was palpable in the right flank. Roentgen studies disclosed a mass in the lower pole of right kidney (Fig. 2). A

Figure 2

right nephrectomy was done on October 27, 1954. The tumor was cleanly removed and no metastases were encountered. The

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† Professor of Radiology, Baylor University College of Medicine, Houston.

kidney contained a circumscribed 4 cm. tumor and the pathologist's diagnosis was Wilms' tumor. Postoperative radiotherapy was given to the operative site (2500r tumor dose through opposing 6 by 8 cm. fields in twelve days). The child was returned to his family in good condition.

With the recognition of the second tumor in this family, a carefully casual inquiry was made of other children. There were three and the mother was invited to bring them in to hospital for examination when Jimmie and Frankie returned for follow-up in November.

Leon, age 10 (Fig. 3), was clinically well but an intravenous pyelogram showed a deformity of the uppermost calyx of the right kidney.

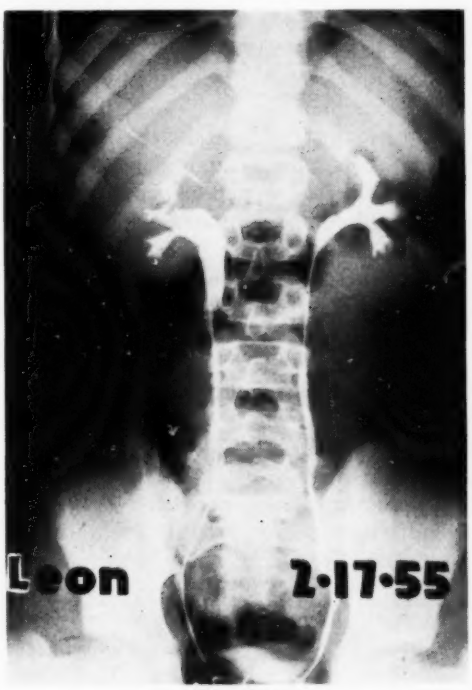

Figure 3

Carl, age 8 (Fig. 4), had no signs or symptoms but an intravenous pyelogram showed questionable displacement of the uppermost calyx of the left kidney.

John, age 21 months (Fig. 5), showed no abnormality on physical or x-ray examination.

James, whose tumor was removed six-

Figure 4

Figure 5

teen months before, now had a definite pulmonary metastasis.

Frank, whose tumor was removed in October, remained free of evident disease.

The overwhelming cancer problem in this family required management with sympathetic caution. James' pulmonary

metastases were treated by radiotherapy (1500r tumor dose to both lung fields through opposing 10 by 15 cm. fields in twenty-one days). The metastatic lesions disappeared but massive recurrence in chest, mediastinum and abdomen developed and he died in February 1955.

After Jimmie's death all children were re-examined.

Frank showed no sign of recurrent or metastatic diseases.

Baby John had no identifiable disease.

Leon and Carl were thoroughly restudied with retrograde pyelography and retroperitoneal air studies. The findings were unchanged. Despite the deformities shown, a renal mass could not be proven. An aggressive approach to diagnosis immediately was not favored by any consultant.

The entire problem of Wilms' tumor as well as the care of this family was a subject for thoughtful appraisal.

Wilms[8] described the tumor that bears his name in 1899. It is sometimes called mixed tumor and adenomyosarcoma because of its varied histologic components, glandular elements, spindle cells, and smooth and striated muscle cells. It is also termed embryoma because some at least have had to originate in utero. On embryologic grounds Nicholson[6] places the time of origin within the period of the third to ninth month of pregnancy.

It is the commonest tumor of early childhood. The peak incidence is between three and four years and 90 per cent are diagnosed between the ages of four months and eight years (Fig. 6). There

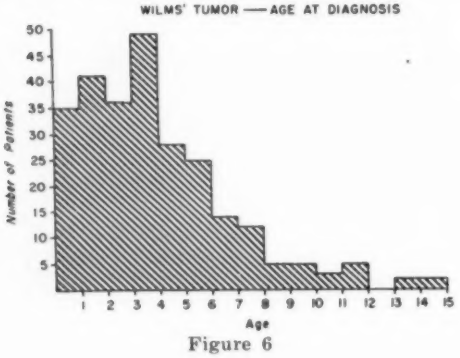

Figure 6

are isolated case reports of Wilms' tumor in adults including one aged 75 years.[7] Because of its deeply located site, it commonly reaches a size of 5 to 10 cm. in diameter before diagnosis. This growth is asymptomatic and the most frequent story is that the parent discovers the mass while bathing or dressing the child. Polycystic kidney and horseshoe kidney are the other likely causes of a palpable kidney at this age. The hypernephroma is a renal tumor of adults with a peak incidence between 50 and 60 years of age.

There are several reports of tumor occurring in siblings. Maslow[5] reported an instance of three proven and one probable Wilms' tumor in one family, all of which ended fatally. Involvement of both kidneys in the same child also occurs. Every reasonable effort must be made to determine that the other kidney is free of tumor before removing the obviously involved one.

There is little delay in seeking medical attention once an abdominal mass is discovered and it is a present custom to consider treatment as a surgical emergency. This is the view of Gross[3] of Boston Children's Hospital where they have evaluated a number of approaches to therapy, surgery alone, radiotherapy followed by surgery and surgery with postoperative radiation. Their choice of treatment methods is immediate surgery on admission to hospital with the first radiotherapy administered postoperatively before the child recovers from anesthesia. The improving therapeutic results are shown in Table 1.

TABLE 1

Date	Patients	Survivals
1914-1930	27	14.9%
1931-1939	31	32.2%
1940-1947	38	47.3%

These figures were first presented in 1949[4] and again in 1953[3] with no change in the percentage of survivals. They attribute the improved survival rate in the second group to reduced postoperative deaths, and in the most recent group to better application of postoperative radiation.

Guidance was sought in this knowledge

of Wilms' tumor that would apply to the management and care of the members of this susceptible family. The known factors involved in achieving cure are diagnosis, surgery, and radiation. The role of each should be closely examined.

Early diagnosis is the starting point of every effort to achieve cure of cancer. In the children under consideration there might be opportunity to establish diagnosis long before the time when tumor, if present, would eventually manifest itself by a presenting mass. Though the clinical suspicion existed and was reinforced by borderline abnormalities in x-ray examination of the kidneys, the presence of the tumor could not be identified with certainty. Exploratory operation was entertained as the only method of establishing diagnosis if tumor was too small to be detected by clinical or x-ray examination. It was necessary to consider the reaction of parents and children to further operations, to weigh the risk of operative mortality, of damage to a normal kidney, and the possibility that a negative or indeterminate finding would be the result of exploration. These might all be held unimportant if death were the certain outcome of failure to intervene, and cure was the probable result of surgical removal.

In the case of the two older children, aged eight and ten years, who would be candidates for surgical exploration, diagnosis of the tumor, however small, could not be considered early if it had been present since before birth. Accepting the prenatal origin, a tumor, if present in either of these children, had evidently grown more slowly than had the tumors of the younger brothers which had reached the size of clinical recognition at the ages of three and four and a half years. There was no available information to indicate the significance of rate of growth in determining prognosis or influencing treatment.

Treatment in the hands of Gross[3] had been reported as increasingly effective and it would be the aim of care for this family to take every advantage of the factors involved. The improvement in results for the period of 1931-1939 is ascribed to diminished operative mortality. Improvement in surgical facilities, anesthesia and supportive procedures, continued through the third period to 1947 but the impressive cure rate of 47.3 per cent was ascribed to postoperative radiation to the operative site. This would imply that the patients were now being saved who formerly died of recurrence of disease incompletely removed from the kidney bed at the time of operation. It also implied that the disease tends to remain localized prior to the time of diagnosis and treatment, but is prone to recur locally in the postoperative period and then set about its fatal course unless eradicated by radiation.

Surgical success or failure must be analyzed separately. A patient is clinically free of disease at any given period after operation for either of two reasons.

1. The tumor was totally removed at operation. This is possible only because the tumor remained localized to the surgically removed specimen.

2. The tumor is so slowly growing that sufficient time has not elapsed to permit it to grow to size of clinical recognition.

Both of these reasons are the result of a growth characteristic of the individual tumor. The number of patients free of disease is properly a measure of the proportion of tumors which grow locally or slowly, rather than a measure of the efficacy of treatment.

Recurrent disease indicates that total removal of disease was not achieved by surgery. For this there are two possible explanations.

1. Tumor had metastasized to distant sites before operation. This is a growth characteristic of the individual tumor that is beyond the control of present forms of treatment.

2. Tumor was locally incompletely removed. This is the sole area for improvement in results. Knowledge of the frequency of this circumstance of purely local persistence is lacking.

The known and observable effect of

radiation is demonstrated in the case history of Jimmy. The primary tumor showed a marked shrinkage under treatment and the pulmonary metastases showed temporary regression. Although these effects may have limited usefulness, radiation can be offered for these specific purposes. The effectiveness of postoperative radiotherapy in obtaining cure after incomplete surgical removal rests on the hopeful assumption that:

1. In an appreciable number of patients there are residual tumor cells in the operative field but none have escaped beyond the field to be radiated.

2. Radiation can completely eradicate such residual cells so that they neither grow locally nor metastasize.

While continuing to offer postoperative radiation on this basis, evidence must be sought to establish the validity of either assumption.

The factors governing the outcome for the patient with Wilms' tumor were still obscure and an investigation of published and unpublished material continued until some 252 cases had been studied.[1]

If one accepts the prenatal origin of this tumor as occurring within a fixed period of embryonic development, then the time of recognition and diagnosis would depend upon the rate of growth. The most rapidly growing tumors would be identified at birth. An average rate of growth would be shown by the tumors appearing in the period of peak incidence between the third and fourth years. More slowly growing tumors would appear later in childhood or even in adult life.

If the rate of growth was characteristic of an individual tumor, then this would govern not only the time of first appearance of the primary tumor but it would also place limits upon the length of time in which a recurrence might be expected to develop. A tumor present at birth had to develop to clinically recognizable size in a period of nine months or less. If it were to recur following surgical removal, then this should require no longer than an additional nine months. A tumor first recognized at the age of five years and incompletely removed should again reach the size of clinical recognition either as recurrence at the primary site or as a distant metastasis in a period not to exceed five years plus nine months.

The records of 206 patients gave information concerning the patient's age at the time of operation and the age at the time of last negative follow-up, recurrence or death. A period of risk was postulated for every patient which was equal to the age at the time of operation plus nine months. Within this postoperative interval, patients were at risk of recurrence. If they lived beyond this period without evidence of recurrent tumor, they might be considered cured (Fig. 7). Of the 206

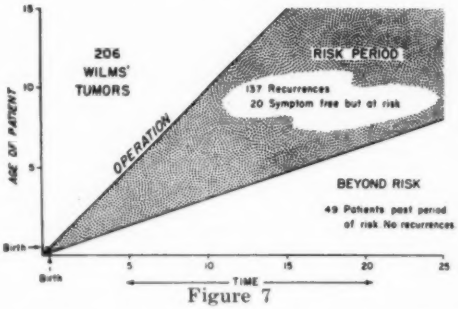

Figure 7

patients studied, there were 137 recurrences or deaths, all of which recurred within the period of risk. There were 20 patients within the period of risk who were symptom free. There were 49 patients who had lived beyond the period of risk. No instance of recurrence was encountered beyond the predicted period of risk.

The significance of these observations is twofold. It tends to confirm the proposal that the rate of growth is a characteristic of an individual tumor and that this governs the time of appearance of the primary lesion and sets a limit upon the time of recurrence if such is to develop. It also offers a new method of estimating the prognosis in a given patient. Whereas statistical methods which accurately determine survival rate predict the outcome for a group of individuals, this is a method of prediction applicable to the individual. While it cannot predict

cure or failure at the time of diagnosis, it does predict a time limit on the risk of recurrence.

In this respect a recent report by Falkinburg[2] is of particular interest. This was a patient in whom Wilms' tumor recurred eight years after operation. From personal communication it was established that the patient was 7 years and 8 months old at the time of the first operation; recurrence was noted eight years and three months later at the age of 15 years and 11 months. The recurrence was just within the predicted limit which would have expired at 16 years and 1 month.

There is an increasing awareness that arbitrary periods such as five years as a measure of survival are of doubtful value. In the case of Wilms' tumor a five year interval of observation is neither necessary nor useful in establishing the outcome. A shorter interval will suffice for younger patients, a longer interval is necessary for older children before declaring them free of risk of recurrence. Without a consideration of age of the patients comprising the series reported by Gross[3] it is not possible to determine the influence of treatment in producing a five year survival of 47.3 per cent.

Gross[3] states that in his series of 96 patients, only 2 recurrences developed later than nine months after treatment. In the 206 patients reviewed in this study, the records did not always distinguish between the time of recurrence and the time of death. Of 137 recurrences or deaths, 51 occurred nine months or more after operation. Of 38 dated recurrences, 16 were known to have occurred nine months or more after operation. This appears to indicate some undetermined difference in the material of Gross' series.

As a result of this study, our current appraisal of Wilms' tumor is that it is prenatal in origin. The time of appearance of the primary tumor is governed by the growth rate so that rapidly growing tumors appear at birth or shortly after, and a few very slowly growing tumors occur on into adult life. The growth rate of a given tumor is a characteristic of that tumor and governs the time of recurrence if cure is not achieved. Following operation the patient is at risk of recurrence for a maximum period equal to his age at the time of operation plus nine months. If recurrence does not develop in this interval, the patient may be considered cured. Younger patients may be declared free of risk of recurrence at an earlier age than may older patients.

The outcome of treatment is determined by another growth characteristic of the individual tumor, that of continued growth as a localized mass without shedding metastases to distant sites. In the series studied, 49 of 206 passed the predicted period of risk to give a cure rate of 25 per cent by this method of analysis. This means that about one quarter of Wilms' tumors grow to size of clinical recognition without establishing metastases. Taking into account the duration of tumor, the rate of growth, and the volume of tumor achieved in the period of silent development, it is felt that if the individual tumor has the ability to metastasize, this ability is likely to be exercised before diagnosis. Metastasis is unlikely to be the final act of a long established tumor during the immediate preoperative period.

Surgery is not viewed as an emergency procedure if such action jeopardizes the thoughtful preparation of the patient or the family. The most distinct advance in treatment has been the diminished operative mortality and this must be maintained.

The effect of radiation is demonstrable only on gross tumor. Its usefulness and limitations in the management of advanced disease are not questioned. It is useful in diminishing the size of a bulky primary tumor. The argument against preoperative radiation deplores the delay in surgical removal but this is short relative to the total duration of the tumor. The argument for preoperative radiation is that the risk of metastases is lessened if the diminished bulk of tumor can be removed with minimum manipulation. If either has merit they are judged equal risks and convenience is the guide. Post-

operative radiation is continued as a standard procedure because on hypothetical grounds control of persistent localized disease is the only avenue of possible improvement in current results. Material is being re-examined to determine the frequency of recurrence in the operative site and whether this is lessened in the group of patients receiving postoperative radiation.

Application of this appraisal to the problem of the family under discussion leads to this attitude on treatment and management.

In the case of Jimmy, the tumor was of moderate growth rate and had the ability to establish distant metastases. These growth characteristics determined the ultimate outcome long before diagnosis. Treatment could not effect cure but it probably delayed death by some months.

Frank's tumor had a very slightly faster rate of growth. Whether it was capable of establishing distant metastases has not been established. Born on October 19, 1951, and operated on October 27, 1954 at the age of 36 months, he is at risk of recurrence until the age of 81 months (36 + 36 + 9). If no sign of local recurrence or distant metastases is evident at that time, he may be considered cured.

Eight year old Carl and ten year old Leon are under troubled supervision because of questionable calyceal deformities. If either has a Wilms' tumor it is in the group of slower growth rates. Whether there is a relation between rate of growth and ability to metastasize is not established but if ability exists there have been many years for metastases to have occurred. If metastases have not occurred with this long opportunity, it seems likely that this favorable growth characteristic will continue to govern behavior.

Baby John has no sign to suggest the presence of a renal tumor, but he is young enough to harbor an occult tumor with a growth rate slightly more rapid than average.

These three children should be followed at intervals of three months for the youngest, and six months to one year for the older brothers. The period may be increased with age because no change could be detected in very slowly growing tumors in short intervals of time.

Although the record of this family is incomplete the considerations governing a current problem are somewhat different than retrospective analysis. The report may therefore be of value in management of other patients in whom the outcome is not yet clear.

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PELVIC MASSES OBSTRUCTING VAGINAL DELIVERY *

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The discussion of pelvic masses that may obstruct vaginal delivery must, of necessity, include those which do not absolutely preclude vaginal delivery, some of which are amenable to correction by minor procedures, as well as those that prohibit normal termination. In addition, we should recognize the lesions which, after major surgery, allow the vaginal route to be exercised.

In order to facilitate classification, these masses have been subdivided into four main categories, namely: (1) vulvovaginal, (2) uterine, (3) ovarian, and (4) extragenital.

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CATEGORY I. VULVOVAGINAL

Inflammatory vulvovaginal lesions will, on occasions, produce obstruction to the vaginal passage. In 1947, Kaiser and King[1] reviewed 38 labors in 26 patients with lymphopathia venereum, in which abdominal delivery became necessary in 3 due to extensive scarring of the recto-vaginal septum.

Bartholin abscess may produce a tumor large enough to be disturbing but should be readily amenable to incision and drainage and antibiotic therapy, care being taken to prevent contamination of the uterus.

Luetic gummatous lesions may, as well, occur in the vulvar region. However, their initial appearance concomitant with the onset of labor would be extremely unusual and they should readily subside with antisyphilitic treatment if discovered prenatally.

Vaginal cysts, in the vast majority of instances, are small and of no concern although occasionally one may encounter a cyst of mullerian or wolffian origin that creates a hazard. Aspiration of these cysts may be easily accomplished with removal at a later date after the puerperium and complete involution has been experienced. Probably the most common tumor of this type one might expect to occur would be a Gartner duct cyst in the anterolateral vaginal wall.

Solid benign vulvovaginal tumors such as fibromata, fibromyomata and lipomata may occasionally attain a size of such proportions as to cause dystocia but local removal should satisfactorily overcome this.

Carcinoma of the vulva, fortunately, is usually a disease of elderly women, but should it be encountered during early pregnancy treatment, as in other cases of vulvar cancer, that is, radical vulvectomy, should be undertaken. If the patient is at term or in labor, cesarean section should be done with vulvectomy at a later date.

Primary carcinoma of the vagina, a rare lesion of poor prognosis, if diagnosed during early pregnancy before the fetus is viable would present a complex problem in that, to be effective, treatment should include radium, x-ray therapy, and radical surgery, with obvious fetal loss. Near or at term, a decision is not so involved in its consequences, an elective cesarean section being indicated followed later by definitive treatment for the malignancy.

CATEGORY II. UTERINE

In discussing uterine masses obstructing vaginal delivery, leiomyomata, or uterine fibroids, are the most common tumors present. Duckering and associates[2] in a review of 22,283 pregnancies from 1937 to 1943, at New York Hospital, discovered 361 cases of pregnancy associated with myoma uteri of significant size (6 cm. or more) for an incidence of 1.4 per cent. These figures must necessarily vary according to the type of patients seen, a predominance of colored clientele such as is found at Charity Hospital causing an increase in the percentage rate due to their predilection to the development of myomata.

It is extremely desirable to evaluate the size and position of fibroids prior to pregnancy or as early in pregnancy as possible. At a later date confusion due to fetal parts may complicate the diagnosis. It is also well to bear in mind that these tumors may enlarge or undergo degeneration during pregnancy.

The majority of pregnant women with uterine fibroids will go to term and deliver vaginally. If it is thought that the fibroid occupies a position and is of such size as to impinge on the pelvic passage, an attempt should be made to gently elevate the myoma from its location within the pelvis. Many will spontaneuosly retract and allow the presenting part to descend. It may be noted here that abnormal positions and presentation of the fetus are common in the presence of uterine fibroids.

Should the fibroid be incarcerated in the pelvis and absolutely impede the progress of labor, a cesarean section is the procedure of choice.

It is not within the scope of this paper to evaluate the removal of fibroids at the time of cesarean section but in my opinion, it is less traumatic to do a section

hysterectomy than to attempt to enucleate large intramural or broad ligament fibroids out of the wall of the uterus. A pedunculated fibroid on a small pedicle is another situation and removal may be accomplished without risk.

Rarely, in congenital anomalies such as a bicornuate uterus, the nonpregnant portion may become dependent and obstruct the progress of labor. In such an event, cesarean section may have to be resorted to.

Carcinoma of the cervix, in most large series reported, apparently occurs with less frequency during pregnancy than in the nonpregnant uterus. Ward[3] states that in 36,274 obstetric cases at New York's Woman's Hospital, 10 cases of malignancy of the cervix were revealed.

In the treatment of a parturient woman with cervical carcinoma, there appears to be no unanimity of opinion among gynecologists. However, therapy seems to be based on the period of gestation as regards the chance of fetal survival. Should the tumor be diagnosed prior to the time one would expect the baby to survive delivery, all measures should be directed against the malignant growth, including radium, x-ray therapy and radical surgery, disregarding the uterine contents. After the twenty-eighth week of pregnancy, one may perform a cesarean section, followed by appropriate therapy directed toward the malignancy. In no event should a viable fetus be allowed to deliver through the carcinomatous cervix.

CATEGORY III. OVARIAN

Ovarian tumors complicating pregnancy, while not as frequently encountered as myomata of the uterus, are present often enough to keep in mind the possibility. Grimes and collaborators[4] in a review of 15,071 consecutive pregnant women, recorded enlargement of a 6 cm. or more to be present in the ratio of 1 to 274 pregnancies. Most investigators report a much smaller incidence. Fortunately, the majority of these are of a benign cystic variety. Dougherty and Lund[5] from an intensive research of the literature, reported 30 instances of solid ovarian tumors complicating pregnancy and added 6 cases from Charity Hospital for a total of 36 cases.

Diagnosis is greatly enhanced if the patient presents herself for prenatal care early in pregnancy. Small cystic ovarian tumors, 6 cm. or less, should be followed expectantly and usually will not require removal or hamper vaginal delivery unless they enlarge or torsion occurs.

Larger ovarian cysts, all solid ovarian tumors and those suspected of being teratomas or dermoids should be removed during pregnancy, the optimum time being the fourth to fifth month of gestation, after the placental function is well established and before the pregnant uterus attains such size as to hinder surgery.

Should these ovarian masses be discovered at or near term or in labor and be incarcerated in or not easily elevated from the true pelvis, cesarean section with removal of the tumor should be undertaken. Danger of rupture of a dermoid with severe granulamatous peritonitis, hemorrhage into the cyst or peritoneal cavity due to trauma, and torsion of the tumor must be recognized. Those ovarian masses which may easily be elevated out of the pelvis so as not to impede the progress may be removed during the puerperium after vaginal delivery has been accomplished. Some, of course, will be corpus luteum cysts and may regress spontaneously during the postpartal period.

If at all possible, one should employ the use of diagnostic pelvic x-rays, intravenous pyelograms, and possibly, proctoscopic examination. I am sure many operators have been embarassed on opening an abdomen for an ovarian tumor only to discover an ectopic kidney, rectal carcinoma, or retroperitoneal tumor.

It is also advisable, in the presence of an obvious dermoid in an ovary at surgery, to closely inspect and bivalve the opposite ovary, inasmuch as approximately 20 to 25 per cent of these tumors are bilateral and a small one enucleated at this time may prevent loss of the ovary or future surgery.

CATEGORY IV. EXTRAGENITAL

In considering the extragenital masses which one may encounter as obstructive to vaginal delivery, the distended bladder and rectum should not be overlooked. Isolated cases have been reported in which these situations were present and prevented normal descent of the presenting part. Treatment, consisting of evacuation of the impacted feces or catheterization of the bladder, is self evident.

Carcinoma of the rectum occurs as frequently in pregnant women as in nonpregnant women of a corresponding age group and it behooves us to routinely employ digital examination of the rectum in our physical examination when the patient is first seen prenatally and not to limit this procedure to following the progress of labor. In addition, if our suspicious are sufficiently aroused, we should not hesitate to obtain a barium enema and proctoscopic examination.

In early pregnancy, radical excision of the rectal malignancy with gland dissection or a Miles abdomino-perineal resection should be done without regard for the fetus.

If the pregnancy is at or near term, it is best to avoid compression of the tumor mass or the danger of rupture of the rectum and subsequent dissemination of the malignant cells and infection; therefore the abdominal route should be chosen for delivery. Later, radical extirpation of the rectal carcinoma may be undertaken.

Loveland and Dockerty[6] and Voegelin and McCall,[7] in excellent reviews of extragenital pelvic tumors in women and of bony abnormalities influencing the conduct of labor, presented very comprehensive information on the less commonly seen masses presenting in the birth canal.

To summarize these lesions we should consider the congenital anomalies such as an ectopic pelvic kidney, teratomas and meningocele; the neurogenic tumors such as the neurofibroma, ependymal cell glioma, ganglioneuroma and ependymoblastoma; the bone tumors illustrated by the benign giant cell tumor, osteogenic sarcoma, Ewing's tumor and sacrococcygeal chordoma; and a miscellaneous group which may include myogenic tumors, fibromata, metastatic carcinoma, lipomata, retroperitoneal cysts and Hodgkin's disease and others of the lymphoma group.

The majority of these lesions, if of any significant size, should be detected on a careful pelvic examination, which must include palpation of the anterior sacral surface and all pelvic walls within reach of the examining fingers.

If such a tumor is encountered during early pregnancy, every effort should be made to establish a definite diagnosis. Included should be x-rays of the pelvic bones, intravenous or retrograde pyelography, proctoscopic examination and barium enema, and possibly, an exploratory laparotomy.

Should any of these tumors be encountered in labor or near term and progress of labor is obstructed, cesarean section should be done with exploration to determine the nature of the mass so that definitive therapy, if indicated, may be instituted at a later date.

In conclusion, I would like to briefly mention the experience locally at the Baton Rouge General Hospital, an institution of 250 beds. In reviewing the 4897 deliveries which occurred during the calendar years 1953 and 1954, four cesarean sections were done during this period for pelvic masses which were either obstructing labor or judged to be hazardous to vaginal delivery. Two of these four were due to large uterine myomata and the remaining two were benign ovarian teratomata (dermoids). This would be an incidence of 1 to 1124 deliveries insofar as the limited numbers reviewed indicated.

SUMMARY

1. A review of pelvic masses obstructing vaginal delivery is given.

2. Emphasis is placed on careful pelvic examination as early in pregnancy as possible together with follow-up examinations prenatally and during labor as indicated.

3. Recommendation is made that all diagnostic facilities necessary be used to

determine the type of mass present.

4. A short review of a small number of cases encountered locally is presented.

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RADIOLOGICAL EVALUATION OF LOW BACK PAIN *

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Every radiologist has on many occasions been asked by the clinician for his opinion as to whether or not, what is seen on the x-ray films, is sufficient to produce symptoms which vary greatly in different patients.

The problem of low back pain is complex and far from completely understood, but, if we are willing to give careful consideration to the known facts, it will help to clarify the bewilderment common to those unwilling to attempt it.[1]

The approach to each case of low back pain should be threefold: (1) an accurate recording of facts from the inception of the patient's complaint, (2) general physical examination, including a comprehensive investigation of possible foci of infection and analysis of body habitus; (3) x-ray examination. This is placed third, not to minimize its importance or necessity, but rather to emphasize the first two which are so frequently neglected, discarded, or overshadowed, because of an x-ray report revealing a departure from normal which may have no bearing whatever upon the symptoms.

The literature of roentgenologic findings in low back and sciatic pain is plentiful. This area is subject to many congenital anomalies, as well as acquired changes due to trauma, disease, or other pathologic conditions.

It must be emphasized that low back pain is a symptom, not a disease. This symptom complex is related to many of the medical and surgical specialties.

Shands [2] divides the cases characterized by pain in the low back region, according to etiology, into four main groups:

1. Ligamentous and muscular injuries of the normal lumbar spine and pelvis.
2. Visceral lesions causing low back pain.
3. Acquired lesions of the skeleton.
4. Congenital anomalies of the low back.

The roentgenologist is called upon to examine patients in all of these groups. In this paper, the literature has been reviewed and the x-ray findings believed to play a role in the cause of low back pain have been listed.

LIGAMENTOUS AND MUSCULAR INJURIES OF THE NORMAL LUMBAR SPINE AND PELVIS

In the first group, the lesion is presumably a tear or sprain of a ligament which supports and limits the mobility of a large weight-bearing joint. They are classified into lumbosacral sprain and sacroiliac sprain. In this group the x-rays are useful in differentiating the sprains from the following:

1. Chronic arthritis of the lumbar spine or sacroiliac joints.
2. Fractures.
3. Ruptured intervertebral disk.
4. Tuberculosis.
5. Malignancy.
6. Some visceral diseases.

VISCERAL LESIONS CAUSING LOW BACK PAIN

The second group, or visceral lesions which can cause low back pain, include the following:

1. Gastrointestinal conditions such as an overloaded colon causing irritation to the lumbar nerves; a spastic colon; disorders of the appendix and rectum; intra-abdominal adhesions; and hernias.

* Presented at the Seventy-fifth Annual Meeting of the Louisiana State Medical Society, New Orleans, May 3, 1955.

2. Urological conditions such as infections and tumors of the prostate.

3. Gynecological conditions, for example, retroversion and retroflexion of the uterus.

4. Central nervous system lesions—to name a few: tabes, meningitis, syringomyelia, lateral sclerosis, tumors of the spinal cord, and tumors of the cauda equina.

5. Sciatic neuritis.

6. Infections and tumors of retroperitoneal structures.

7. General infectious diseases causing low back pain such as typhoid, influenza, and septicemia.

ACQUIRED LESIONS OF THE SKELETON

The third group, or acquired lesions of the skeleton, would include the below listed conditions:

1. Low grade infections. Inflammatory lesions, such as rheumatoid spondylitis, give morning pain; whereas osteomyelitis gives constant pain.

2. Neoplasms. These give constant low back pain. They may be either primary or metastatic. From the roentgenographic point of view, involvement of a vertebral body or bodies and uninvolvement of the intervertebral discs, so that they remain clear and of usual width, is pathognomonic of malignant disease.[3]

3. Fractures. Traumatic spondylitis, as well as fractures of facets and pedicles give static backache.

4. Pathological conditions of the disc [4]

A. Congenital absence of the disc

B. Pathological conditions of the nucleus pulposus and annulus fibrosus, such as, retropulsion or antipulsion; lateral shift; calcification; infiltration by other tissues, such as fibrous tissue, bone or blood vessels; and dehydration.

C. Pathological conditions of the cartilaginous end-plates, such as, prolapse of the nucleus pulposus; chronic trauma; acute trauma; and diseases of the disk, for example, acute osteomyelitis or tuberculosis.

D. Pathological conditions of the vertebral bodies causing softening of the body and prolapse of the disk into the body.

At this point since we are talking about the intervertebral disk, it may be well to state that thinning of the disk may not be a direct cause of pain, but that the pain is explained by: [5]

I. Tension upon the capsular ligament.

II. Encroachment upon the size of the lumen of the foramina.

III. Impingement of the ends of the articular process against the pedicle above and the lamina below.[6]

5. Chronic hypertrophic arthritis.

6. Metabolic disorders.

7. Neurological conditions.

8. Psychosomatic conditions which give constant pain.

9. Pathologic processes in the muscles and ligaments which cause pain by irritation of the posterior divisions of the spinal nerves; sciatic pain due to tense fascia lata; and pain due to fascial adhesions.

CONGENITAL ANOMALIES OF THE LOW BACK

Cases characterized by pain in the low back region due to congenital anomalies from the fourth main group. It is in this category that roentgenograms are of great help. Below are listed the more important congenital anomalies: [7]

1. Elongation of the transverse process of L 5. These cause pain by impinging on the ilium, causing friction, and thus giving rise to a painful bursa. To demonstrate the relation between the transverse process and the iliac crests, the ray should be directed upward at a 30° angle.

2. Transitional vertebra. These may be either sacralization of the last lumbar vertebra or lumbarization of the first sacral segment. Sacralization of the last lumbar vertebra occurs in 3.5 per cent of normal spines routinely taken. However, it is held that with 50 per cent of the people falling in that group, low back pain is a common experience. Occasionally, cases are encountered that show a nonfusion of the first sacral body to the second and which clinically exhibit more or less motion. Such types of incomplete development are fre-

quently characterized by lumbosacral pain and disability.[3]

3. Defect of the neural arch. Those defects with no obvious protrusion of a sack from the spinal cord are called spina bifida occulta, and are generally found in the region of L 5 or S 1, and occur in about 6 per cent of all spines x-rayed.

4. Variations of the spinous processes. This group is comprised mostly of the "close spines" as described by Ferguson, and occur particularly at the L 4 and L 5 level.

5. Unstable lumbosacral angle. This may take two forms: If the center of gravity of the trunk, as represented by a vertical line through the center of L 3, passes anterior to the sacrum, the weight is not sustained by bone, but by muscles and ligaments, which are, therefore, liable to strain. When the plane of the articular surface of S 1 is too far from the horizontal, sheering stresses are set up which again make the muscles and ligaments liable to strain. We use 45° or over, as being over the limits of normal.

6. Variations of the articular facets. Asymmetry of the planes of articulation of the facets on the left and on the right are particularly liable to form a mechanical basis for strain. Other important points to observe, when studying the facets, are: [10]

A. Narrowing of the space between the articulating surfaces of the facets, or subluxation of the apophyseal joints.

B. Marginal proliferation about the articular surfaces of the facets, indicating hypertrophic changes, or in many instances, traumatic arthritis.

C. Fractures through the surfaces of the facets or through the adjacent laminae and pedicles. Points A, B, and C rightfully belong in the group of acquired lesions of the skeleton, but were purposely included here to keep all considerations of the facets together.

7. Spondylolisthesis.[8] These are cases where the lamina are not united to the pedicles, the body is displaced forward, and the spine and lamina are left behind. In cases of a separate neural arch with no displacement of the body, the most prevalent term is "prespondylolisthesis". Meyerding gives the following percentages for the location of spondylolisthesis:

82 percent slipping of L 5 on S 1.

11.3 per cent L 4 on L 5.

Less than 1 per cent of L 3 on L 4 and L 2 on L 3.

4.4 per cent reverse spondylolisthesis.

8. Platyspondyly.[9] This is a congenital anomaly consisting of a widened vertebral body, diminished in vertical diameter and posterior spina bifida and usually limited to L 4 and 5. The adjacent intervertebral disks are increased in height. Complaints are of weakness of the back and neurotrophic signs due to the spina bifida.

MINIMUM SEVEN POSITIONS FOR COMPLETE LOW BACK SURVEY

It is felt that seven views is the minimum number for the complete survey of the lower back. Additional exposures are taken as required. These seven views are as follows:

View I. AP of the pelvis. This gives an overall survey of the relationship of the lower vertebrae to the pelvic bones and hips. This position may be supplemented by:

A. AP pelvis, with both lower extremities flexed and abducted. This adds the lateral views of the proximal femurs (frog position).

B. AP pelvis, patient erect, barefooted, both feet flat, parallel and bearing equal weight. This view gives difference in length of the lower extremities by direct measurement.

C. Superior inferior view through the pelvic canal, patient semi-recumbent (Thom's position).

D. Right or left oblique.

View II. AP lumbar spine. This view gives an overall survey of the lumbar bodies and interspaces. Attention is directed to contour, texture, and relationship of the bodies, pedicles, lamina, spines, and transverse processes. This may be supplemented by: An AP spot of any questionable body.

View III. AP five inch spot of the lum-

bosacral junction, with the central beam through the interspace, angled 30° toward the head (Ferguson position). Attention is directed to the interspace and adjacent body surfaces; both sacroiliac joints; articular facets for symmetry and plane of action; state of fusion of the sacral wings; the transverse processes of L 5 with their relation to the sacrum; the condition of the arch of L 5. This view may be supplemented or replaced by a larger spot if the distal sacrum and coccyx is to be included.

View IV. Lateral lumbar spine. This view gives an overall survey of the lumbar area. Attention is directed to the first four bodies, their relationship, the interspaces and spinous processes. (L 5 and the sacrum are examined by a special view). This may be supplemented by: opposite lateral; spot of any single questionable body; and if increased lordosis is to be estimated or the center of gravity located, this exposure is made with the patient erect.

View V. Lateral lumbosacral five inch spot. This gives better detail of the interspace and relationship of L 5 to S 1. This may be supplemented by: opposite spot; same spot, patient erect, for determination of plane of sacrum in weight bearing as measured by differences in the anterior sacral angle; larger spot if distal sacrum and coccyx is to be included.

Views VI and VII. Right and left obliques. These views allow closer inspection of the interarticular facets and intervertebral foramina.[10] These may be supplemented by spotting any questionable area.

SUMMARY AND CONCLUSIONS

The problem of low back pain is complex and far from completely understood. The approach to each case should be threefold: (1) an accurate recording of facts, (2) general physical examination, and (3) x-ray examination.

On the basis of etiology, cases of low back pain are divided into four groups:

1. Ligamentous and muscular injuries of the normal spine and pelvis.
2. Visceral lesions causing low back pain.
3. Acquired lesions of the skeleton.
4. Congenital anomalies of the low back.

There exists a sufficiently large element of error in the diagnosis of low back pain, regardless of the thoroughness and comprehensiveness of the clinical investigation, to make roentgenographic examination of the area obligatory, in order that there may be some degree of certainty as to the fundamental factors involved in the production of the disability.

It is our contention that a minimum of seven positions are necessary for a *complete* low back survey, and if more complete surveys were done, and carefully interpreted, the element of error in diagnosis of low back pain would be reduced appreciably.

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ROLE OF THE AMERICAN CANCER SOCIETY IN PROFESSIONAL EDUCATION IN LOUISIANA

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All practitioners are aware of the campaign of the American Cancer Society to have the public regard every doctor's office a detection center for cancer. Since

the funds of the organization in Louisiana are far too limited to be used in supporting the treatment of individual cancer cases, the resources of the organization have been directed toward supporting research and efforts of the medical profession to disseminate all existent information about the diagnosis and treatment of the disease. In view of the importance of the disease from the standpoint of the number of people affected in the state each year, it would seem both timely and useful to set forth the current program of the Louisiana Division, American Cancer Society, Inc.

The program of the Louisiana Division consists of five major parts: (1) Provision of visiting speakers and visual aid material to local and state medical groups, (2) Support of a Cancer Detection Clinic at Tulane University at present and that of Louisiana State University in the past, (3) Major contribution to the Tumor Registry at Charity Hospital in New Orleans and complete support of the Tumor Registry at Charity Hospital in Shreveport, (4) Cancer Research Grants to residents of Louisiana, (5) A biennial Louisiana Cancer Conference to be initiated during the current year.

The Cancer Society has a complete set of films on diagnosis and treatment of cancer prepared by groups sponsored by the organization. The list of these films, many of which are in duplicate, is offered. They may be obtained by writing to the Louisiana Division, American Cancer Society, Inc., at 822 Perdido Street, and stating the dates desired for showing the film and the anticipated date of its return. Television programs of the national Society on cancer topics have been recorded on kinescope and these are also becoming available in increasing numbers. Funds are set aside each year to defray the expenses of inviting visiting speakers to local and state medical society meetings. Any organized medical group may participate by using the application form which appears in the back of this Journal. The funds will be distributed on an impartial basis by a medical committee, but applications must be made well in advance of the anticipated meeting.

The Tumor Registry at Charity Hospital was reorganized in 1952, and the American Cancer Society, the State Department of Health and Louisiana State University agreed to contribute funds for its continuation. It is now in operation with records up-to-date for the past six years and includes over 10,000 cases. This not only provides a more adequate and rapid method for evaluating the results of treatment but is a means whereby uniform cancer reporting for the entire state may be achieved. Information concerning each case is coded on International Business Machines cards and an effort is being made to retain uniformity in this coding between registries set up in all hospitals in the state. A consultation service is maintained within the framework of the registry, and any hospital within the state may obtain information and samples of the forms used by writing to the director of the registry at Charity Hospital. This is particularly valuable at the present time, since the American College of Surgeons does not approve cancer clinics in hospitals without an established cancer registry. The registry at Shreveport Charity Hospital also utilizes the same system of classification of patients and coding as the registry in New Orleans. Although the resources of the Louisiana Division of the Cancer Society are not sufficiently large to finance additional registries, it is hoped that the pilot registry at Charity Hospital will serve as a model for other registries throughout the state.

Anyone who treats the cancer patient realizes the deficiencies in present methods of treatment. The obvious way in which this situation can be improved is through research. Although grants made through the Committee on Growth of the National Research Council are available to all who wish to apply, there has been no source of funds for competition at a local level. The Louisiana Division has estab-

lished such a fund and annually awards at least $5,000. to investigators within the state who make application before April of each year on standard application forms which may be obtained from the state headquarters of the society. During the past year four such grants were awarded. It is hoped that this will encourage young investigators to initiate projects which some day may provide the answers which are now lacking and serve as limitations to the management of the disease.

Just as visiting speakers are desirable in medical meetings, contact with other scientists engaged in similar research is essential for investigators in the Louisiana area. Therefore, a biennial tumor conference has been set up. At each conference a given kind of cancer will be discussed by national and international authorities. Opportunity will be given to local investigators in the clinical or basic sciences to discuss problems of techniques, experimental design and theory with visiting participants.

The professional education program is administered by The Board of Directors through its committees. Applications for funds for the purposes outlined are reviewed by fellow members of the medical profession. The program has evolved over a number of years and is designed particularly for Louisiana. It provides means by which the two individuals who are best fitted to strike back at cancer, the physician and the investigator, may work more effectively in the state.

FILMS AVAILABLE
FOR PROFESSIONAL AUDIENCES
FROM
LOUISIANA DIVISION, AMERICAN CANCER SOCIETY, INC.
822 Perdido Street, New Orleans 12, La.

1. "What is Cancer"

   16mm—Color—Sound—25 Minutes

   This is a film for nurses (and hospital and public health staffs). It emphazises that nurses have a special role in early diagnosis and in rehabilitation of patients who have undergone treatment. Scenes are presented from operating rooms and clinics together with animation of the problem of the beginning, spreading, and curing of cancer. Historical background material on cancer is also included.

2. "The Exfoliative Cytologic Method in the Diagnosis of Gastric Cancer"

   16mm, Color—Sound—22 Minutes

   Produced by the American Cancer Society and prepared by the Cornell University Medical College and The New York Hospital under the supervision of Doctors George N. Papanicolaou and William A. Cooper.

   The background of this cytological method is briefly shown, its present usefulness and disadvantages are indicated, and the procedure is visually presented by live photography and stylized animated drawings.

3. "Cancer: The Problem of Early Diagnosis"

   16mm—Color—Sound—30 Minutes

   This is the first of the following series of five professional films (#3 through #7 on this list) produced in cooperation with the National Cancer Institute of the United States Public Health Service on the "Problem of Early Diagnosis".

   The purpose of this film is to stimulate discussion of the problem of diagnosis. It is recommended that this picture be used as a part of a program planned on the subject of cancer.

4. "Breast Cancer: The Problem of Early Diagnosis"

   16mm—Color—Sound—34 Minutes

   The film may be used for audiences of medical societies, medical schools, hospital staffs and any gathering of physicians or nurses. It underscores the need for regular and thorough examinations.

5. "Gastrointestinal Cancer: The Problem of Early Diagnosis"

   16mm—Color—Sound—33 Minutes

   The film shows how, through use of modern diagnostic methods and certain simple laboratory tests, many gastro-intestinal cancers can be found at the early, curable stage.

6. "Uterine Cancer: The Problem of Early Diagnosis"

   16mm—Color—Sound—21 Minutes

   Audience: Medical societies, medical students, hospital staffs and any gathering of physicians and nurses.

7. "Oral Cancer: The Problem of Early Diagnosis"

   16mm—Color—Sound—33 Minutes

   This film has been produced for both the medical and the dental professions and appears to have considerable practical value for the practicing physician and dentist. "Oral Cancer" outlines the physician's and dentist's responsibility for the early recognition of malignant and potentially malignant lesions of the oral cavity; depicts the steps in a thorough examination of the

mouth which can be carried out by either the dentist or the doctor; presents significant statistical data illustrating the increased five-year survival rates when such lesions are treated early, and concludes by presenting six cases of oral cancer illustrating early cancers of the gingiva, tongue, buccal mucosa, palate, lip, and the floor of the mouth.

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BACKACHE DURING PREGNANCY; ITS ETIOLOGY AND MANAGEMENT *

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ROBERT H. HUTCHINSON, M. D. †
NEW ORLEANS

Although our upright posture represents the culmination of the ascendency of organic life over gravity,[7] and, although by assuming this upright posture our upper extremities have been freed of their locomotive functions and allowed to develop into one of our greatest instruments and assets,[1] this upright posture has not been accomplished without penalties. Some of the more obvious penalties we pay for our bipedalism are flat feet, varicose veins, visceroptosis and—backache. The last of these, backache, is of special interest to us and forms the basis of this presentation.

Backache appears to affect all adults at various times and in varying degrees, and females during gestation are no exception. In fact those who concern themselves principally with diseases of women are certain all women have backache, and especially all pregnant women, and therefore, an aching back is a normal state for the female. Since backache is a symptom and not a disease [8] we will approach this problem by first enumerating the various causes of backache, especially those specifically associated with or secondarily aggravated by pregnancy. We will then discuss methods of value in ameliorating and controlling this all too common symptom complex. For purposes of discussion the myriad causes of back pain can be divided into three groups; those causes unrelated to pregnancy; those associated or aggravated by pregnancy; and those directly arising from the process of gestation.

The first group includes congenital anomalies, fractures, sprains, strains, herniated intervertebral discs, infectious processes, neurologic, metabolic and neoplastic diseases, as well as a host of thoracic, abdominal, and pelvic pathology which produces referred pain in the back. Although not related to pregnancy, all of the above must be considered in a differential diagnosis of the pregnant woman's complaint of back pain. We must also be cognizant of the fact that, irrespective of its etiology, back pain is increased in severity either as a result of pelvic congestion or because of psychogenic disturbances experienced by most patients during gestation. Congenital anomalies such as spondylolisthesis and incongruity of facets are especially prone to aggravation during pregnancy and produce increasingly severe back pain as the altered body mechanics become more marked during the last trimester.

Although surgical intervention for the correction and relief of such conditions is contraindicated by the presence of the pregnancy their presence must be recognized and proper conservative measures instituted to afford the patient relief. It should also be pointed out that neoplastic lesions, either primary or secondary in the spine are adversely stimulated by the increased titer of growth hormone present during pregnancy and progress in a most bizarre and rapid manner. This effect sometimes is so marked that some consider it an indication for interruption of pregnancy. Failure to properly evaluate and diagnose such a lesion may not only prove embarrassing for the clinician but exceedingly dangerous for the patient.

Our second group of causes of backache, namely those secondarily accentuated or influenced by the pregnancy are two in number, namely faulty body mechanics and

* Presented at the Seventy-fifth Annual Meeting of the Louisiana State Medical Society, New Orleans, May 3, 1955.

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pressure or traction on the spinal nerves passing through the pelvis.[5, 6, 9, 10, 13, 14]

The most common cause of backache in all age groups, irrespective of sex, or the status of uterine physiology is poor posture and altered body mechanics. Obviously the alterations in body mechanics associated with pregnancy are simply exaggerations of postural defects usually associated with back pain. These consist of the relaxation of the abdominal musculature, a pendulus abdomen, increased lordosis, and forward rotation of the pelvis. It is no wonder then that backache should arise so frequently during pregnancy as a result of these postural defects. Backache, arising as a manifestation of postural defects, usually appears during the second trimester of the pregnancy and is characterized by discomfort in the back upon arising from the supine position; increased discomfort during the latter part of the day with fatigue and incomplete or partial relief by recumbency, especially with flexion of the hips and knees. Since altered body mechanics is the most common cause of backache during pregnancy it is fortunate that this type of patient can be offered the most as far as treatment is concerned. Successful management begins with an accurate evaluation and reassurance of the patient by the physician coupled with active participation in a regime of definite periods of rest coupled with exercises designed to counteract the effect of gestation on the abdominal muscles and to increase the strength of the pelvic rotators. The relief of back pain afforded by postural exercises is increased by instituting the exercise regime during the first trimester before the symptoms become too severe and the alteration in body mechanics too marked. All exercises are based on those usually classified as flexion exercises as outlined by Williams.[12] Those exercises which produce unusual strain on the abdominal wall or increased intra-abdominal pressure are usually avoided.

The importance of the proper support both while the patient is lying down as well as during ambulation should not be overlooked. A semifirm bed achieved by placing a support (plywood, fiber board or masonite) between the mattress and spring of the bed is essential if the patient is to be afforded adequate rest during the night as well as during the daily rest periods. Some patients obtain increased comfort in the semiflexed position through the use of a bedding role beneath the knees to flex the hips and knees or

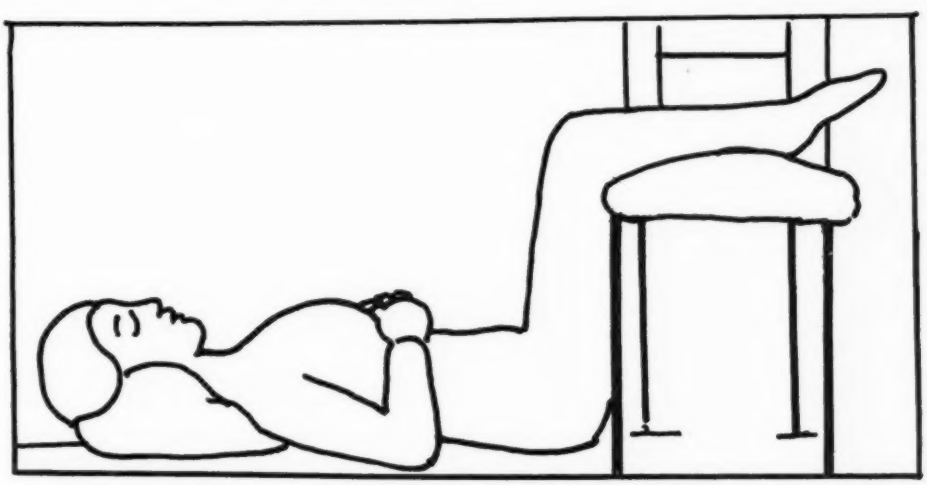

Figure 1. Effective traction on hips and low back can be obtained by lying supine with lower leg resting on chair.

This is extremely efficient in overcoming severe lumbar muscle spasm.

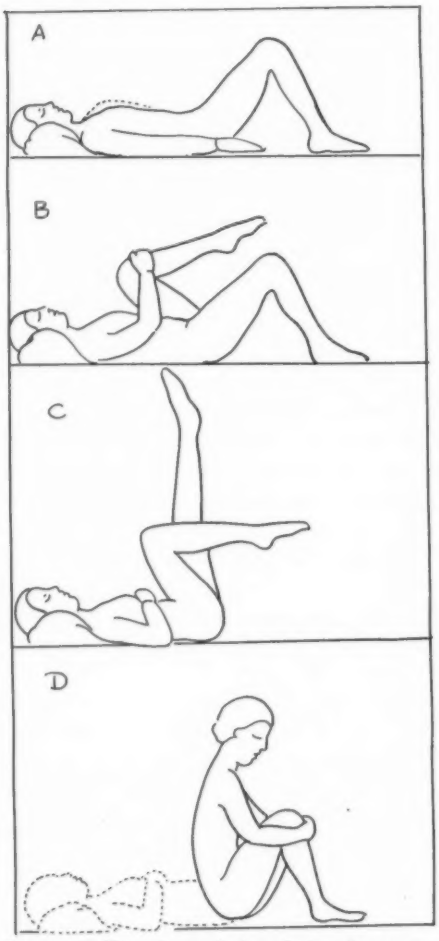

Figure 2. Exercises designed to decrease the lordosis and increase the strength of abdominal musculature as modified by Williams and Ishmael and Shorbe.

A. Hips and knees flexed to flatten lumbar spine against floor, deep breathing is practiced to secure elevation of thorax.

B. With knees flexed alternate knees are drawn up onto trunk to stretch tightened extensors of spine and overcome lordosis.

C. Slow straightening of the flexed hip and knee stretches the hamstring and increases tone in abdominal musculature.

D. With hips and knees flexed patient slowly assumes erect sitting position, useful in increasing tone of abdominal musculature.

the elevation of the lower leg on a chair while recumbent.

The use of a lumbosacral support is frowned on by some authorities; however, an adequate lumbosacral support which comes well down over the buttocks and gently supports the lower abdomen anteriorly, frequently affords significant relief to these patients. It should be pointed out that such garments must be well constructed, adequately reinforced and should be long, coming well down over the buttocks in back.

Although success is dependent upon complete cooperation on the part of the patient, the correction of postural defects through appropriate rest and exercises most frequently fails because the patient has not been sufficiently impressed with the importance of the exercises or adequately instructed in their use. This results in intermittent application of the exercises and incomplete cooperation on the part of the patient and failure of the method.

The second cause of backache in this group influenced or accentuated by pregnancy results from pressure or traction on the spinal nerves as they course through the pelvis.[14] Such symptoms usually arise from pressure on the ilio-femoral and ilio-inguinal nerves although the sciatic nerve or the sacral plexus is occasionally involved. Backache associated with pressure on peripheral nerves is characterized by pain along the crest of the ilium radiating into the lower abdomen and anterior medial aspect of the upper thigh if the ilio-femoral or ilio-inguinal nerves are involved. Such backache is also characterized by relief obtained in a recumbent position or in recumbency with elevation of the hips. Occasionally, injecting exceptionally painful trigger areas along the crest of the ilium affords some relief. This group of patients are frequently improved by the use of a lumbosacral support as outlined above.

The third group of causes of backache unique to the period of gestation are those associated with disturbances of the endocrine balance and result from certain hormonal fractions which are present only during pregnancy. These fractions result in relaxation of the pelvic ligamentous structures. Todd[11] in 1923 first showed

that the pelvis of guinea pigs separated at the symphysis during gestation and parturition. Hisaw [4] demonstrated that this mechanism resulted from relaxation of the ligaments at the symphysis pubis and sacroiliac articulation. He also showed that hormonal substances arising in the ovaries and fetal membranes produced this phenomenon. This substance he termed relaxin. It was later demonstrated that estrogens stimulate the formation of acetylcholin in the uterus. Emery and his workers [2, 3] felt that the increased vascularity in the uterus possibly increased the extent of pelvic relaxation. They have further studied the effect of prostigmine and desyoxycorticosterone both of which produce relaxation in the pelvis in guinea pigs, and to a certain extent in monkey's. A similar effect has been demonstrated in humans. A similar pelvis relaxation has been demonstrated by this same group in male monkey's after priming with either theelin or stilbestrol followed by prostigmine or releasin.[2, 3]

Although the presence of pelvic relaxation during pregnancy and even during menstruation has been conclusively demonstrated, its importance as an etiology factor in producing back pain during pregnancy is somewhat difficult to evaluate since accurate methods of measuring the amount of these various substances are not clinically applicable. Furthermore, there is considerable variation in the response to these hormonal factors between various individuals. It is currently held that hormonal relaxation of the pelvis accounts for a certain percentage of symptoms in backache during pregnancy and that such backache is usually characterized by localization over the posterior iliac spine and over the symphysis pubis, increased in severity with activity, and aggravated by pelvic distraction and compression. Such patients are usually afforded considerable relief by the wearing of some constricting support encircling the pelvis above the trochanters. Occasionally such patients, with exceptionally severe relaxation of the pelvis, cannot be afforded relief except by bed rest. It is usually believed that the number of patients with backache arising from relaxation of pelvic structures is relatively small although its effects may contribute to symptoms from other causes.

SUMMARY

An enumeration of the various and sundry causes of backache during pregnancy has been presented.

The importance of adequate evaluation and accurate differential diagnosis has been discussed.

The most common cause of backache during pregnancy results from the altered body mechanics characteristic of pregnancy. An aggressive regime of proper rest, postural exercises and adequate support have been outlined which if conscientiously applied and accurately carried out afford the most satisfactory means of managing such cases.

The effect of hormonal fractions and their effect on pelvic ligaments has been discussed. It is felt that a relatively small percent of women demonstrate the effect of pelvic relaxation as a cause of backache during pregnancy but that the number, though small warrants its consideration as a factor in backpain in all pregnant women.

There is no panacea successfully applicable in all cases of backache during pregnancy.

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TREATMENT OF TUBERCULOSIS TODAY

Authoritative opinion as to the prevalence and treatment of tuberculosis is of importance to every physician. Approximately 1,200,000 people who have had a tuberculous infection need medical supervision in some degree today. Approximately 800,000 of these are believed to have inactive tuberculosis; 400,000 are estimated as being active. Of the 400,000 active cases, about 250,000 are known to health authorities.

The mortality rate has dropped in the past decade from some 40 per 100,000 to roughly 12 per 100,000, or in some instances, an estimated 10 per 100,000. The incidence of new cases annually has not shown a corresponding decrease in proportion to the drop in mortality. Tuberculosis is still a leading cause of death in the age group from 15 to 34. Within the next year, it is estimated 100,000 people will catch tuberculosis, and it still kills more people than all the other infectious diseases combined. It is obvious that the reduction in the mortality rate is not to be interpreted as an indication that the disease is disappearing. The drop in mortality of the last ten years is attributed to the three chemotherapeutic agents and to surgery, which is made possible by them. Streptomycin came into general use late in 1947; para-aminosalicylic acid in 1949, and isonicotinic acid hydrazide in 1952.

The use of these drugs, together with other forms of therapy, has been reported upon six times by the Veterans Administration-Army-Navy group, which has been studying the chemotherapy of tuberculosis since 1946. Comparative studies have yielded information of great value. As noted in the most recent report of the cooperative study, and in other reports, with the advent of chemotherapy there has been a tendency towards increased liberalization of the bed rest regimen. Authorities differ as to the degree and duration of rest. Bed rest is still regarded by many as the basic plan around which all other forms of therapy should be built.

As in the past, much discussion turns around the question of activity of tuberculosis lesions. An inactive lesion has been defined as one showing roentgen stability without evidence of cavity, and adequate negative bacteriological studies for a period of at least six months. A lesion not filling these criteria is active. The general consensus is that all tuberculosis lesions which are considered active should be given the benefit of chemotherapy. This becomes especially important in light of the figures given above, in which the mortality

rate has declined about 50 per cent in the past ten years but the incidence of new cases is not showing a corresponding decrease.

It is stated authoritatively that the utilization of chemotherapy for the primary type of pulmonary tuberculous lesion does not in any way accelerate its healing. The impression has been forming that the chemotherapy exerts a bacteriostatic effect upon the germ of tuberculosis. The defenses of the organism are then brought into the struggle to overcome the disease more effectively. In connection with these thoughts it is remarked that there has been disagreement over a period of years as to whether the tubercle bacilli found by microscopic examination of smears from surgically resected residual lesions of patients who have had prolonged chemotherapy are alive, dead, or merely asleep. It is now known that by prolonged culture by special techniques positive findings may be found in patients who have received treatment for more than a year. An additional bacteriological finding is of importance. Fitzsimmons Army Hospital reported that 50 per cent positive cultures were obtained from perihilar lymph nodes of 103 resected specimens. The significance of these findings is, as would be expected, still under discussion.

In regard to the manner in which the chemotherapeutic agents are to be used, it is agreed that two should be used together, and except in tuberculous meningitis or miliary tuberculosis, it is not necessary to use three. The advantage of using two is that only by such means can the appearance of resistant acid fast bacilli be prevented in the sputum. Twelve months of chemotherapy is regarded as an absolute minimum, with eighteen to twenty-four months advised in many cases. Tubercle bacilli were found in culture in approximately 10 per cent of the patients who were treated for twelve months.

The dosage currently used may be approximated as follows: Streptomycin is used in a 1 gram dose twice a week, except under unusual conditions. Isoniazid is used in 300 mg. doses, for the average patient, daily. This dose is increased by three or four times in miliary tuberculosis or tuberculous meningitis. Para-aminosalicylic acid is used in doses of 4 grams of the acid (approximately 5 grams of the sodium salt) three times a day. Because of gastrointestinal irritation it has been found necessary to build this dose up gradually. A different form of para-aminosalicylic acid under the name of Therapas (a combination of sodium para-aminosalicylic acid and p-carboxy-benzene-sulfo-di-n-ethylamide) has been reported as giving a higher level of this therapeutic agent in the blood with less gastric irritation.

Indications for surgery are in a continuous state of discussion and revision. The period of preoperative chemotherapy in the cooperative study reported above exceeded three months in 75 per cent of the cases. Six months of postoperative chemotherapy is now recommended by the surgical committee.

Other drugs undergoing study are Pyrazinamide, and Seromycin (cycloserine). The latter drug has been quoted as showing favorable results in patients severely ill with pulmonary tuberculosis.

Pneumothorax has been largely superseded by other measures in this chemotherapeutic regime, and the same is true to a less extent of pneumoperitoneum.

It is apparent that the therapeutic effectiveness of the physician's efforts in the care of tuberculosis has been greatly increased in the last ten years. The method and the procedures are not static. The physician's obligation in discovering and treating tuberculosis is now more keenly felt than ever.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1956 ANNUAL MEETING

The 1956 Annual Meeting will be held in Alexandria April 23-25 and the following committees on arrangements, appointed by the President of the host Society, Dr. H. Q. Gahagan, are already very active in making plans and arrangements for the meeting.

General Chairman: Dr. H. H. Hardy, Jr.

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Committee on Finances: Dr. W. H. Heath, Jr., Chairman, Dr. M. Lee Jarrell, Vice-Chairman; Drs. J. M. Edwards, W. R. Aderhold.

Committee on Golf: Dr. H. Q. Gahagan, Chairman, Dr. C. P. Herrington, Vice-Chairman; Drs. Paul M. Davis, Jr., E. R. Pincus.

Committee on Hospitals: Dr. Ralph Lampert, Chairman, Dr. A. L. Seale, Vice-Chairman; Drs. Allen C. Winters, J. E. Wheeler, W. P. Hurder, John B. Maxwell.

Committee on Hotels and Meeting Rooms: Dr. D. B. Barber, Chairman, Dr. A. L. Culpepper, Vice-Chairman; Drs. R. C. Scott, W. L. Murrell.

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Scientific Program

The chairmen of the various scientific sections, list of whom was carried in the August issue of the Journal, have met with the Committee on Scientific Work and preparations are being made for the scientific program. The Committee on Scientific Work, in line with wishes of the Executive Committee, is arranging a similar program to that held at the 1955 meeting; having two sessions, one on surgery and one on medicine, held simultaneously on Tuesday and Wednesday (mornings and afternoons) during the meeting. Members desirous of participating in this program should contact the chairman of the specific section in which they are interested, concerning a place on the program.

Hotel Reservations and Scientific Exhibits

Shortly after the first of the year members will receive a communication concerning procedure to follow in securing hotel reservations and also containing information in regard to scientific exhibit space. It is hoped that prompt replies will be received to these inquiries in order that all requests may be taken care of adequately.

Additional information concerning the meeting will be published in future issues of the Journal. If, however, specific data is desired in the interim, it is suggested that members communicate with the general chairman, chairmen of specific committees or with the office of the Secretary-Treasurer of the State Society.

EDITOR AND GENERAL MANAGER ATTEND STATE MEDICAL JOURNAL CONFERENCE

Dr. Philip H. Jones, your Editor, and Dr. C. Grenes Cole, your General Manager, attended the State Medical Journal Conference, under the auspices of the Advisory Committee of the State Journal Advertising Bureau, held at the American Medical Association Headquarters in Chicago on November 7-8.

The Conference brought out many points of interest and furnished much valuable information on the editing and publishing of medical journals, which we hope, will result in many benefits for our Journal.

Thirty-seven State Journals were represented and those who were privileged to attend, we are sure, profited greatly by being present.

LOUISIANA HEALTH COUNCIL MEETING

Judging by the attendance and the enthusiasm of participating members at the recent meeting in New Orleans of the Louisiana Health Council, we would feel that it was a most successful meeting and merits the commendation and thanks for the officers and personnel of the Program Committee.

It is unfortunate and discouraging that more of our doctors do not become members of this organization or attend its meetings. Much more could be accomplished for the health and welfare of our people throughout the state if more of our physicians would become interested in these programs.

We are looking forward to more participation on your part in the future.

DR. C. G. COLE HONORED BY THE ADVISORY COMMITTEE OF THE STATE JOURNAL ADVERTISING BUREAU

At its recent meeting in Chicago, on November 7 and 8, the Advisory Committee of the State Journal Advertising Bureau honored Dr. C. Grenes Cole by electing him Chairman.

This Committee represents the State Medical Journals of thirty-seven states in their relations with national advertisers. The activities of this committee are largely responsible for the financial stability and success of these State Journals.

Dr. Cole has been a valued member of the Journal Committee of the Louisiana State Medical Society for some years and recently has been most successful as General Manager of the Journal of the Louisiana State Medical Society.

This gracious honor given Dr. Cole is grateful recognition of his considerable effort through a period of many years for the welfare of this Journal and for his valuable contributions as a member of the Committee in recent years. The Journal is most pleased to congratulate Dr. Cole.

DEATHS 1954 * AND 1955 MEMBERS OF LOUISIANA STATE MEDICAL SOCIETY

Dr. Samuel Barkoff, New Orleans, July 10, 1955

Dr. Theodore Thomas Batson, New Orleans, March 13, 1955

Dr. Harry Edward Chalstrom, Jr., Baton Rouge, July, 31, 1955

Dr. Joseph Anthony Danna, New Orleans, December 15, 1954

Dr. Philip C. De Verges, New Orleans, November 9, 1955

Dr. Nicholas Kuntz Edrington, New Orleans, September 22, 1955

Dr. Wm. J. Gilbert, New Orleans, February 21, 1955

Dr. Edgar Beach Hands, Shreveport, July, 1955

Dr. Ewell A. Kleinpeter, Thibodaux, November 19, 1954

Dr. Morris Stirling LeDoux, Rayne, September 29, 1955

Dr. Daniel Cull McCuller, Bossier City, November 17, 1954

Dr. Clifford R. Mays, Shreveport, November 18, 1954

Dr. Leon John Menville, New Orleans, January 24, 1955

Dr. Raymond Francis Mulligan, Covington, October 7, 1955

Dr. Charlie G. Pattison, Marthaville, September 29, 1955

Dr. Winston B. Singletary, Baton Rouge, January 12, 1955

Dr. Risdon Ernest Smith, Minden, March 25, 1955

Dr. Guy Stanhope St. Amant, Gonzales, May 26, 1955

Dr. Roger Allen Tharp, Mansfield, October 2, 1955

Dr. Joseph William Watson, Baton Rouge, September 8, 1955

Dr. Joseph Whitaker, St. Joseph, December 14, 1954

* Not previously reported in Journal of December, 1954.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Thursday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The nineteenth annual meeting of The New Orleans Graduate Medical Assembly will be held February 27, 28, 29 and March 1, headquarters at the Municipal Auditorium.

Eighteen outstanding guest speakers will participate and their presentations will be of interest to both specialists and general practitioners. The program will include fifty-four informative discussions on many topics of current medical interest, in addition to clinicopathologic conferences, symposia, color television, medical motion pictures, round-table luncheons and technical exhibits.

The Assembly has planned another interesting postclinical tour to follow the 1956 meeting in New Orleans. On Friday, March 2, a party composed of doctors and their families will leave New Orleans for the West Indies and Central America via plane. The itinerary includes Puerto Rico, St. Thomas, Haiti, Jamaica, Panama and Guatemala, and arrangements have been made for medical programs in the places visited. The party will arrive in Guatemala City on March 22 and an optional extension to the fascinating highlands of Guatemala has been arranged.

Details of the New Orleans meeting and the postclinical tour are available at the office of the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12, Louisiana.

FLORIDA MIDWINTER SEMINAR IN OPHTHALMOLOGY AND OTOLARYNGOLOGY

The Tenth Annual University of Florida Midwinter Seminar in Ophthalmology and Otolaryngology will be held at the Sans Souci Hotel in Miami Beach the week of January 16, 1956. The lectures on Ophthalmology will be presented on January 16, 17, and 18. Those on Otolaryngology on January 19, 20, and 21. A midweek feature will be the Midwinter Convention of the Florida Society of Ophthalmology and Otolaryngology on Wednesday afternoon, January 18, to which all registrants are invited. The registrants and their wives may also attend the informal banquet at 8 p. m. on Wednesday. The schedule has been changed to provide a maximum time for recreation each afternoon.

AMERICAN RHINOLOGIC SOCIETY

Dr. Ralph H. Riggs, Shreveport, who was one of the five charter members of the American Rhinologic Society, was elected President for the coming year at a recent meeting of the Society.

DISEASES OF THE SKIN

The second annual one-day course, stressing diagnosis and management of a few of the more common skin diseases, will be held at L.S.U. School of Medicine on Saturday, January 21, 1956 from 9 a. m. to 4 p. m. Cases will be presented and discussed by members of the Department of Dermatology. There will be no didactic lectures. Registration fee is $10.00. Those interested please contact the Department of Dermatology, L.S.U. School of Medicine, New Orleans.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next scheduled examination (Part I), written examination and review of case histories, for all candidates will be held in various cities of the United States, Canada, and military centers outside the continental United States, on Friday, February 3, 1956.

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For further information contact Robert L.

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1955 - 1956 AWARD CONTEST

The International Academy of Proctology announces its Annual Cash Prize and Certificate of Merit Award Contest for 1955-1956. The best unpublished contribution on proctology or allied subjects will be awarded $100.00 and a Certificate of Merit. Certificates will be awarded also to physicians whose entries are deemed of unusual merit. This competition is open to all physicians in all countries, whether or not affiliated with the International Academy of Proctology. The winning contribution will be selected by a Board of impartial judges, and all decisions are final.

The formal award of the First Prize, and presentation of other Certificates, will be made at the Annual Convention Dinner Dance of the International Academy of Proctology, April 26, 1956, at The Drake, Chicago, Illinois.

The International Academy of Proctology reserves the exclusive right to publish all contributions in its official publication, "The American Journal of Proctology". All entries are limited to 5,000 words, must be typewritten in English, and submitted in five copies. All entries must be received no later than the first day of February, 1956. Entries should be addressed to the International Academy of Proctology, 147-41 Sanford Avenue, Flushing, New York.

BOOK REVIEWS

The Pyramidal Tract: Its Status in Medicine; by A. M. Lassek, M. D., Springfield, Illinois, Charles C Thomas, 1954, Pp. 166, Price $4.75.

This lucidly written and well published tract is an amplification for the general medical audience of a paper by the same author written for the Association for Research in Nervous and Mental Disease meeting, in 1948. The basis of the work is the brilliant observation that only two or three per cent of the pyramidal tract is made up of large fibers, which probably have origin in the large cells of the central cortex commonly called Betz cells. The origin of the small fibers making up 95 per cent of the pyramidal tract has not been conclusively established, though much of it is cortical in origin, between Brodmann areas 1 through 7. Neuroanatomists never intended the idea that the pyramidal tract should be associated with Betz cells exclusively, as the noncommittal name "pyramidal" would suggest. However, many anatomists writing for medical students have until recently used the two words synonymously, perhaps because of the unfortunate synonym "pyramidal cells" for Betz cells because of the triangular appearance in section. The problem is complicated by the fact that there is a tendency to fail to distinguish between extrapyramidal and pyramidal in simplified clinical discussions of such general regions as the "motor cortex," "internal capsule," and the "lateral columns." It is, of course, only in the medullary pyramid that the pyramidal tracts are reasonably well separated from the extrapyramidal fibers. The remainder of this volume concerns itself with the history of various techniques of investigating the pyramidal tract. Some of these have been considered in somewhat greater detail in the definitive monograph *The Precentral Motor Cortex,* (Illinois Monographs on Medical Science, Volume IV 1944, P. C. Bucy, Editor.) There are some further studies presented in this monograph concerning the pathology of the pyramidal tract of current interest.

W. RANDOLPH PAGE, M. D.

The Clinical Physiology of the Lungs; by Cecil K. Drinker, M. D., Springfield Illinois, Charles C Thomas, 1954, Pp. 84, Price $5.50.

In this stimulating monograph, the emphasis is placed upon the structural basis for the ventilatory and circulatory adaptations within the lungs. The author uses clinical and experimental situations, such as infarction, pulmonary congestion and edema and artificial respiration to clearly illustrate the action of the five basic pulmonary structural units: arteries; veins and capillaries; bronchi and bronchioles; nerves; and lymphatics. He shows that many of the functional reactions within the lungs are locally controlled but does not neglect central nervous regulation. The size of the work precludes discussion of chemical regulation of ventilation, gas exchange, and pulmonary function tests. However, since the book is excellent as well as brief, it can be strongly recommended as an important aid to the understanding and treatment of pulmonary and cardiac disorders.

MORTON M. ZISKIND, M. D.

PUBLICATIONS RECEIVED

Doubleday & Co., N. Y.: Polio Pioneers; The Story of the Fight Against Polio, by Dorothy and Philip Sterling.

The C. V. Mosby Co., St. Louis: Pathology Seminars, by Lauren V. Ackerman, M. D., Arthur C. Allen, M. D., Colonel J. E. Ash, M. D., Arthur Purdy Stout, M. D., and Rupert A. Willis, M. D.

W. B. Saunders Company, Phila.: The Relief of Symptoms, by Walter Modell, M. D.

Charles C Thomas, Publisher, Springfield, Ill.: The Pediatric Years: A Guide in Pediatrics for Workers in Health, Education and Welfare, by Louis Spekter, M. D.

University of Florida Press, Gainesville: Planning Florida's Health Leadership: Medical Education in the University, edited by Louis J. Maloof (Vol. 5).

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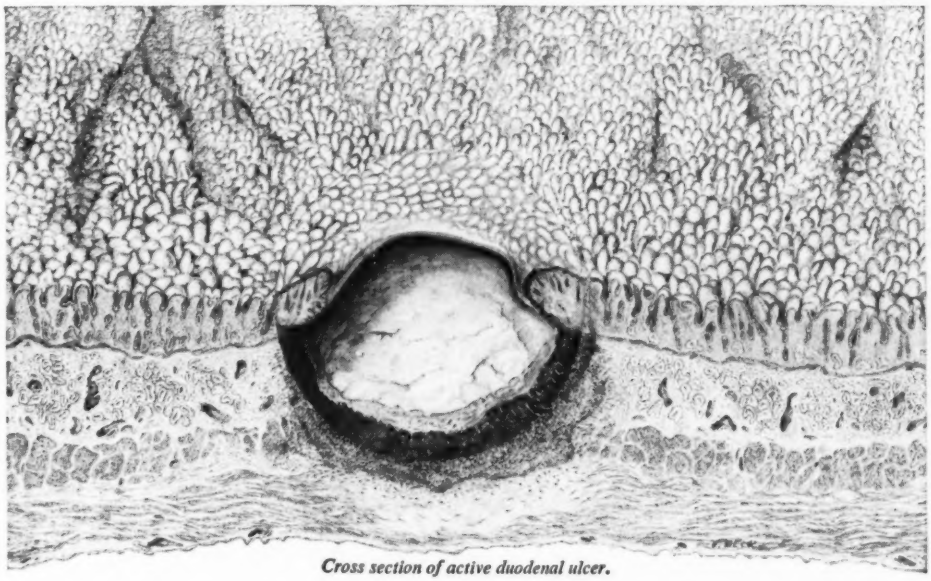

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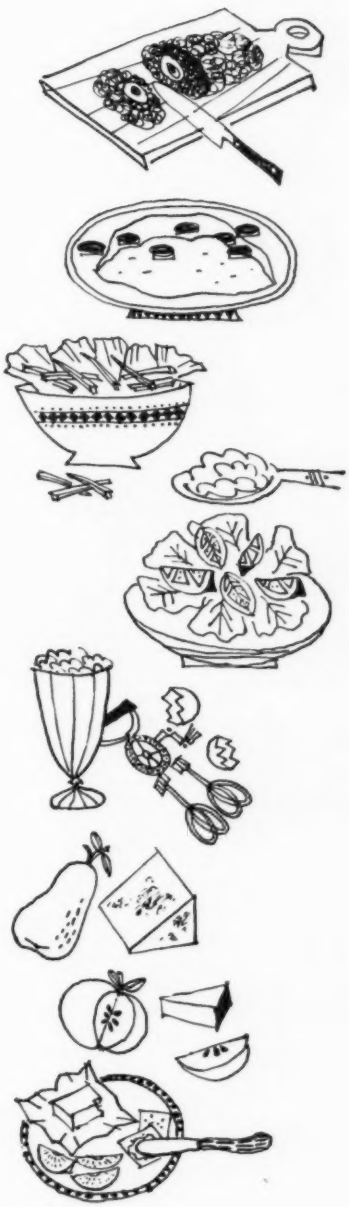

Mix a protein bonus in the main dishes—

Your patient can add skim milk powder along with the seasonings in meat loaf—then hide hard-cooked eggs inside for a bright-eyed surprise.

A fluffy omelet folded over penny-sliced frankfurters, ground cooked meat, flaked fish or cheese is both tempting and economical.

And a green salad topped generously with shoestrings of meat and cheese carries its weight in protein.

Then add more to the rest of the meal—

Cottage cheese is happily versatile. It tops any salad—fruit, vegetable, flaked fish. Makes a pleasing spread, too, especially on dark breads. Thinned with milk and mixed with chili sauce, it's a zesty salad dressing. Or a good amount can be whipped into mashed potatoes.

An egg white whipped into fruit juice makes a frothy flip. Or you might suggest gelatin instead.

And a fruit-cheese dessert is a gourmet's delight. Pears go with blue cheese, apples with Camembert, orange sections with cream or cottage cheese.

Of course, not all protein foods supply all the amino acids. But with sufficient variety, the diet is likely to supply all the essential ones, and at the same time assure adequate amounts of the vitamins necessary for proper protein metabolism.

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The results to date have been most gratifying. For example, we have learned that—

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—Wine serves as a quick-energy food. Its small amount of hexose is speedily absorbed and its moderate content of alcohol is metabolized readily even by diabetics;

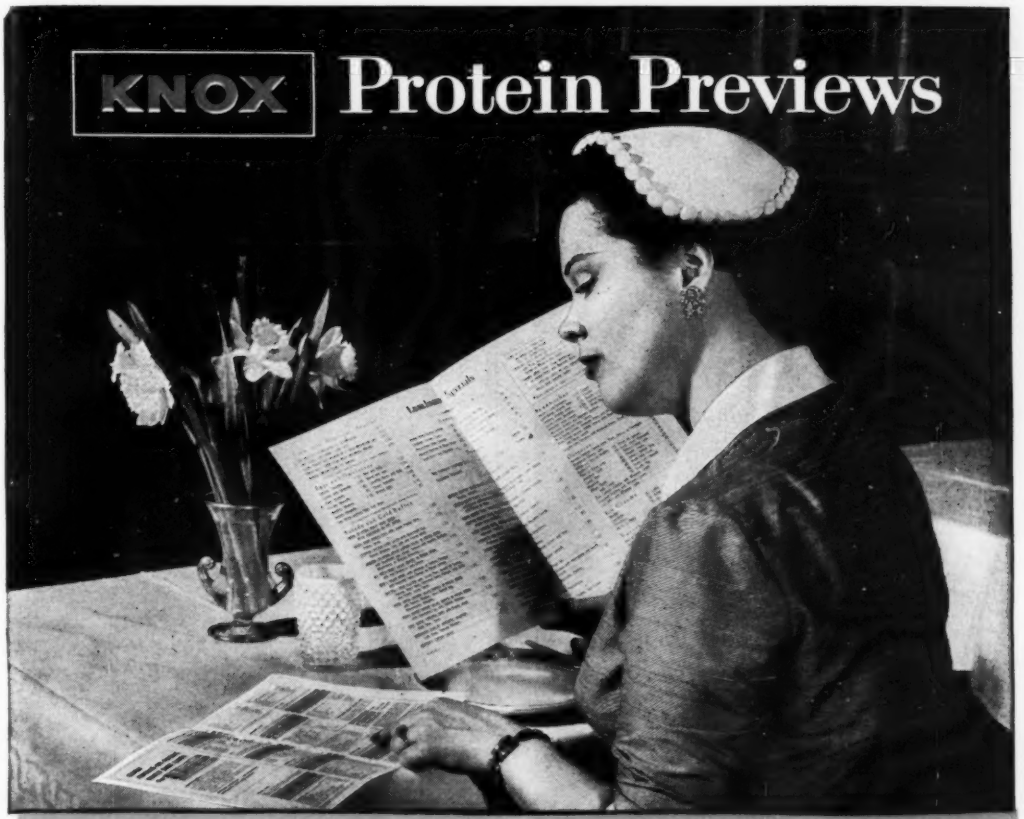
—Wine possesses significant vasodilating, diuretic and relaxing properties of value in the field of cardiology;

—A little Port or Sherry at bedtime is a valuable relaxant to the insomniac and may obviate the need for sedative medication.

And wine can help brighten the often unappealing character of special or restricted dietaries—a psychological boost of inestimable value to the debilitated and depressed patient.

We believe you will find "Uses of Wine in Medical Practice" a valuable addition to your files. A copy is available to you at no expense, by writing to: Wine Advisory Board, 717 Market Street, San Francisco 3, California.

*Georges Ray, Vins de France, Paris, University Press, 1946 (p. 75).



New Knox Food Exchange Chart Eliminates Calorie Counting

To help your obese patients reduce and stay reduced, Knox introduced this year a new dieting plan based on the use of nutritionally tested Food Exchanges.[1] The very heart of this new dietary is a "choice-of-foods diet list" chart which presents diets of 1200, 1600 and 1800 calories.

Each of these diets may be easily modified to meet special needs. However, the important points for your patients are that the use of this chart eliminates calorie counting, permits the patient a wide range of food choices and dispels that old empty feeling by allowing between-meal snacks.

These advantages should make your management of difficult and average cases easier. If you would like a supply of the new Knox charts for your practice, just fill in the coupon below.

1. Developed by the U. S. Public Health Service assisted by committees of The American Diabetes Association, Inc. and The American Dietetic Association.

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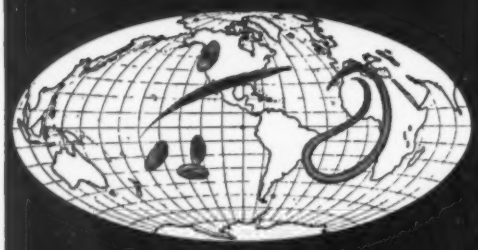

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Those interested please inquire

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PEDIATRIC NEUROLOGY

February 27—March 3

This year's refresher course for qualified pediatricians will have as its guest speaker Dr. Douglas Buchanan of the University of Chicago. A comprehensive program will deal with basic considerations and clinical management of convulsive disorders, degenerative diseases of the nervous system, infections of the brain and meninges, and other such broad subjects. Selected members of the entire medical school faculty will participate, and stress will be placed mainly on clinical aspects of neurologic disorders of early life.

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Bumbalo, T. S., Gustina, F. J., and Oleksiak, R. E.: J. Pediat. 44:386, 1954.

White, R. H. R., and Standen, O. D.: Brit. M. J. 2:755, 1953.

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Brown, H. W.: J. Pediat. 45:419, 1954

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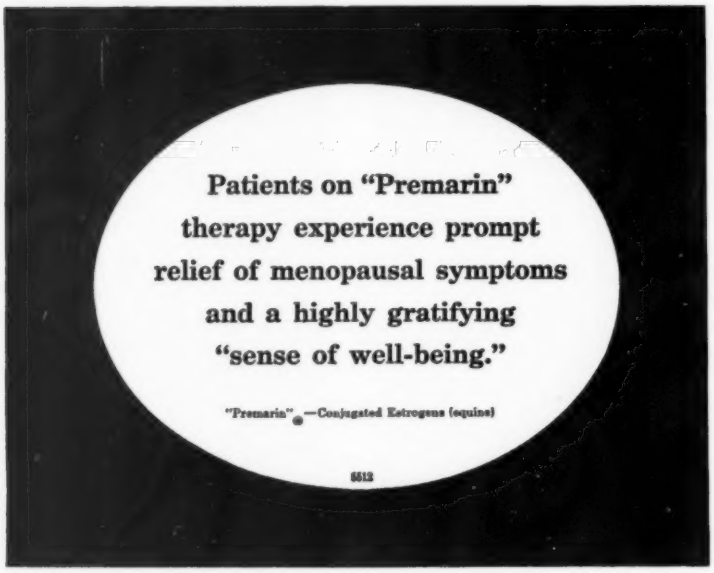

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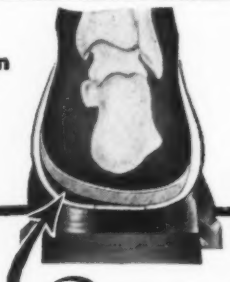

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(1) Jeans, P. C., in A. M. A. Handbook of Nutrition, ed. 2, Philadelphia, Blakiston, 1951, pp. 275-278.

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